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EDITORIAL.

EUROPEAN CHRONICLES.

"BREAKING-DOWN."—Very few are there of our American colleagues who have not met in their practice those cases which are registered under the name of "break-down," and which occur almost instantaneously, leaving an animal with his fetlock down, almost or even touching the ground, the toe turned upwards, and for which, of course, no treatment is possible. When post-mortems are made the lesions are found in the fibrous apparatus of the lower part of the leg, most commonly on the suspensory ligament, whose bifurcating branches are more or less torn from their sesamoidal insertion; perhaps also the tendons of the flexors of the phalanges are involved, and with those periarticular lesions of almost characteristic nature. In other cases the lesion occurs below the fetlock, at the os pedis, where the plantar aponeurosis is, so to speak, torn from the bone. Not uncommonly structural changes are observed in the bone and evidences of osteoporosis, softening and degeneration, are found to explain the giving way or rather the tearing away which brings on the inability of the fetlock to fulfil its function of support. We remember that some years ago, talking of this form of disease, which we thought was quite more frequent in the United States than in Europe, Prof. Nocard suggested to us the possibility of the tendinous or ligamentous degeneration being due to parasitic affections of those tissues. For some time we had no occasion to observe other cases, but

once in minutely examining the ruptured ends of a suspensory ligament, we thought that we had detected oozing from them and forming in the meshes that surrounded the seat of the lesion little threads which looked to us like worms. We had no opportunity to settle the question in this case, and that we had to deal with cases of parasitism like the form of filariosis due to the presence of *filaria reticulata*, we are not able to say. The careful reading of an excellent article due to the pen of an army veterinarian (M. Prader), which we found in the *Archives de Parasitologie*, has drawn our attention lately to the subject again, and while the subject as treated by M. Prader is not altogether of the same nature as those of our common breaking down, we have thought that some extracts from the *Archives*, with some of the illustrations, might be of great interest to our friend —so much so that we have failed to find anything on this subject in the literature at our disposition. We hope not to be mistaken, and while the subject seems to end only in negative results as far as general therapeuty is concerned, we feel that by presenting it to our readers it will open up for them an opportunity for inquiry and for investigation into the etiology of a disease which is as yet so incomplete.

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TICKS AS INFECTING AGENTS.—The part played by hæmatozoas in the development of diseases among animals is daily made more and more known. To the various *filarioses* which have been known for a long time, have successively been added the diseases due to the *spirochætæ* (spirillosis of geese); to the *trypanosomes* (surra of India), *Nagana* or *disease of the Tsetse* of Austral Africa, and to the *piroplasmas* (bacterian hæmaturia of cattle and *carceag* of sheep, observed by Starcovies and Babés in Roumania; *Texas fever*, so thoroughly studied by Smith and Kilborn; *tick fever* of Australia; *Tristeza* of South America; *Rooi water* of Austral Africa; *hæmoglobinuria of cattle* of Finland, etc., etc. *Piroplasmas* cover an immense field; they are found in every part of the globe and everywhere; *ticks* are also found as the agent of transmission and spreading of the disease.

These remarks that we found in the minutes of the *Bulletin de la Societé Centrale* refer to the report of a case of *canine piroplasmosis*, observed by Profs. Nocard and Almy, which they had observed in a dog suffering with hæmoglobinuria, and not from hæmaturia, as the owner thought. The examination of the blood revealed the presence of the hæmatozoas. The parasites were analogous to those of Texas fever, and presented themselves under the form of little globular masses, with well defined borders, rarely occupying the centre of the red corpuscles, more commonly nearer one of its poles, sometimes single, sometimes two in one corpuscle, and again as numerous as four in number. The history of the case was that the dog had been taken by his owner duck shooting, and that when he came back he was covered with ticks. The dog became sick shortly after. One of the ticks brought to the author was full of blood and ready to lay eggs. Further experiments will be done with those. At any rate, the disease was communicated by injection of the blood of the sick dog to another which exhibited all the symptoms and microscopic lesions that had been found in the first animal. Series of experiments have been established, which will be made public later on, and will serve to illustrate the whole history of this new disease of the dog.

There is, anyhow, one point of importance derived from the few facts presented by this case: it is the danger that dogs run when going in localities infested with ticks, and the necessity that imposes itself for all owners to see that these insects are removed from their skins as early as possible. We hope later on to let our friends know the results of the experiments carried out by Prof. Nocard on this subject.

* * *

GERMANY TO THE FRONT IN HIGHER EDUCATION.—The question of the importance of higher education as a means of elevating a profession is certainly one which all parties interested are always attempting to realize by all kinds of requirements, which are demanded from those who desire to reach a professional degree. Every country in its own way and accord-

ing to the mode in which education is organized, has its manner in proceeding. In countries where education is left to personal efforts, the methods used proceed slowly and by degrees, while in those where the Government has the last word to say, the changes can be made more radical and imposed *nolens volens*. Those conditions are well illustrated by what has occurred in veterinary education in the United States for the last few years and recently taken place on the continent, in Germany.

In its last seating the Reichstag discussed a petition from the German Veterinary Council to the effect of requiring from candidates to admission in veterinary schools "the same university requirements that are demanded for medical students." In the public discussion which took place, every political party expressed their opinions on the subject. The project was adopted with a large majority and returned to the Chancellor of the Empire with the recommendation of the Reichstag.

This is considered as an immense success for German veterinarians; the honor of which being due to the veterinary council and to its president, Professor Hoffmann, and Professor Schmaltz, of Berlin, who, through the press, fought valiantly for it. In no country, not even in France, has such a system of recruiting students been inaugurated, either for faculties or veterinary schools. The experiment which is going to be attempted in Germany is and will be an interesting one to follow. The single fact that it can be recommended shows in what high esteem veterinarians are held in national representation. Years will certainly have to elapse before anything like it is to be found for veterinary institutions in the States.

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A PRIZE FOR IMMUNIZATION AGAINST FOOT-AND-MOUTH DISEASE.—In one of our last chronicles, we called the attention of our readers to the creation of the Audiffret Prize in relation to the discovery of a cure for tuberculosis. Another disease has just been added to the list of those which, having baffled the skill of our sanitarians and of our practitioners, suggested the idea of financial stimulus for new researches. To-day it is foot-

and-mouth disease, that terrible scourge which prevails so extensively of late through Continental Europe, which recently has reappeared in England, after being rid of it for several years, and which in fact has assumed such character as to call the earnest attention of our ever-watchful guardian, Dr. Salmon. In its general meeting, the association of Italian cultivators voted one thousand francs as the starting point of a subscription, to which are to take part the Government, provinces, communes, and agricultural institutions of Italy, to create a prize of one hundred thousand francs to be granted to the one who, in Italy or other country, shall discover an absolutely certain method to give immunity against aphthous fever in bovines for at least a period of two years, without injuring their health. As the study of immunization has already called the attention of many serious and hard investigators on the continent, some even having partly succeeded, it is more than probable that the prize will not remain long without being won. A. L.

A. LIAUTARD.

We reproduce as a frontispiece to this number a late photograph of Prof. A. Liautard, which was recently presented to us as a token of friendship. Since the subject is personally known to most American veterinarians, a large number of whom were his "boys," as he always affectionately refers to those who were so fortunate as to be his pupils, and as he has been absent from America for a number of years, we thought they would appreciate the opportunity to again look upon his pleasant features. Although time has whitened his abundant locks, it will be observed that his eye is as bright as of yore, and from the great volume of scientific work which he accomplishes—much of which is in the interest of REVIEW readers—his spirit is as undaunted, his energy as great, as in the days when he stood at the helm of the embryonic profession of America, championing its interests and assailing every element which threatened its progress. Now that the great cause for which he labored so

long and well is firmly established among the learned sciences, he may well rest upon his laurels, with the satisfying assurance that his name is lovingly enshrined in the hearts of his American colleagues. R. R. B.

THE ASSOCIATION SEASON.

While the details of the programmes of the larger association meetings of the early fall cannot, of course, be presented in this number, sufficient outlines will be found in the department devoted to society meetings to make the assertion that the year 1901 will witness large gatherings of veterinarians at many points to participate in most valuable scientific and practical deliberations. Especially are we gratified to see most perfect arrangements developing in New Jersey, where the National Association will meet for the first time in its nearly forty years of existence; the headquarters, Assembly hall, and clinic amphitheatre have already been secured; Secretary Stewart announces a long list of important papers for consideration and discussion; there are many surgical demonstrations already listed, and the Committee of Arrangements are working incessantly that nothing may be left undone to produce those happy results which alone are secured by perfect arrangements. With prosperity crowding upon veterinarians all over the country, we feel sure that the New Jersey meeting will establish a record for interest and attendance.

In the same department New York's annual meeting is outlined, and the prediction of Chairman of Arrangements Williams that this year's meeting will far exceed in all respects that of 1900 is an assuring indication that there will be a great treat in store for the large number who are sure to attend.

Pennsylvania will hold her annual meeting the week following the National, and, as usual, it will be full to overflowing with all that is best in the Keystone State from a veterinary point of view.

It behooves all who can do so to begin now to shape their affairs to take in as many of these important events as possible.

ORIGINAL ARTICLES.

BOVINE TUBERCULOSIS.

PERIOD OF INCUBATION—AGE OF LESIONS — EXPERIMENTAL RESEARCHES.

By MM. Nocard and Rossignol.

Translated for the Review by J. F. Winchester, D. V. S., Lawrence, Mass.

REPORT OF THE EXPERIMENTS MADE TO DETERMINE THE PERIOD OF INCUBATION IN BOVINES AND THE AGE OF TUBERCULAR LESIONS.

By MM. Nocard and Rossignol.

To the Minister of Agriculture, the Presidents and Members of the Conseils Generaux of Seine, Seine et Marne, Seine et Oise, of the Agricultural Societies of Fontainebleau, Melun, Versailles and of the Society of Practical Veterinary Medicine.

Gentlemen :—In presenting our report we desire at first to state the reasons why the experiments which have been recently conducted at Pouilly le Fort and Alfort were undertaken, before giving the details of them.

Since 1888 our sanitary laws prohibit the sale of tuberculous cattle; but the traffic in such animals continued and the buyer was unable to get any redress, it being impossible for him to prove the existence of the disease at the time of purchase.

The experts whose duty it is to examine the diseased animals cannot give a categorical statement of any case, since they are without knowledge of the period of incubation of tuberculosis or the age of tubercular lesions.

On July 31, 1895, on the motion of M. Darbot, Parliament passed an act amending the laws of July 21, 1881, and August 2, 1884, relative to the sales and exchanges of domestic animals.

This act tended to prevent in a more efficacious way than before the sale of animals afflicted with contagious diseases; unfortunately M. Cledon introduced the following amendment to the Darbot bill:

" However, in cases of tuberculosis in the bovine species, the

sale shall be null and void only when it shall relate to an animal previously condemned by competent authorities."

The object of this amendment was evidently to place tubercular animals beyond the provisions of the law of July 31, 1895; for the sale of a condemned animal will seldom take place, owing to the fact that such a sale is a criminal offense, its author being amenable to the law.

Soon after the Darbot bill took effect lawsuits were numerous, some favorable to Mr. Cledon's theory, others to Mr. Darbot's interpretation, which was more in conformity with the principles of equity; this interpretation is, in fact, the following:

"Every purchaser of an animal suspected to be tubercular must, before he can resort to an action in nullity, fulfill the requisite formalities as regards the administrative authority; such interpretation has been adopted by several Courts of Appeal and affirmed by the Court of Cassation.

There still remained a chance for evasion and for that reason the Society of Practical Veterinary Medicine at its meeting February 12, 1896, proposed the following resolution, which was submitted to the Minister of Agriculture:

"WHEREAS, the act of July 31, 1895, amending certain articles of the act of August 2, 1884, relative to redhibitory causes and of the act of July 21, 1881, relative to sanitary measures, has through obscurity and ambiguity the effect to multiply lawsuits, instead of reducing their number, as it was intended;

"WHEREAS, the Cledon amendment aimed at tuberculosis and passed by Parliament, has resulted in the majority of cases to deprive the purchaser of the redhibitory remedy which he had under the former laws; be it

"*Resolved*, That the act of July 31, 1895, should be revised in the interest of agriculture and that the Minister be requested on behalf of the Government to present such a bill."

M. Darbot, appreciating the necessity for such a revision as requested by the Society of Practical Veterinary Medicine, pre-

sented a new bill which was passed by the Senate in 1899. In order that it may be effective it must pass the Chamber, where it may be opposed by a new Cledon amendment. The text of the law as adopted by the Senate is as follows:

"Exhibiting or selling or offering for sale any animal afflicted or suspected to be afflicted with a contagious disease is prohibited;

"And if a sale has been made, it is of right null and void, whether or not the vendor had knowledge of the existence of the disease with which his animal was afflicted or suspected to be;

"However, no action on the part of the purchaser, by reason of said nullity shall be maintained, when more than thirty days in cases of tuberculosis, and more than forty-five days in cases of other diseases shall have elapsed since delivery, in the absence of public prosecution."

This new law marks some progress, although the burden of proving the existence of the disease on the day of the contract is always on the vendor and there are no data to fix the period of incubation or the age of tubercular lesions.

Messrs. Gallier de Caen and Laquerriere have tried to remedy this by submitting to the Society of Practical Veterinary Medicine a proposed law requiring for contagious diseases a delay commensurate with their period of incubation and carrying a legal presumption of anteriority.

The society approved the principle of this proposed act, but difficulties arose when it became necessary to state the periods of incubation of the various diseases.

The Laquerriere bill fixed the period of incubation for tuberculosis as nine days, but the Society of Practical Veterinary Medicine did not agree with this act.

The society at a meeting held the 9th November, 1899, decided that experiments should be made in order to determine the period of incubation of tuberculosis and also the age of tubercular lesions.

Mr. Laredan, the President, when speaking on this ques-

tion, said that experiments were necessary to determine, as accurately as possible, the time which elapses between the tubercular infection and the first symptoms in the infected animal.

It seems to me that those experiments could be conducted by our society, and in this connection I would ask for the co-operation of Mr. Rossignol. I now request him to prepare a plan and our society will decide whether it is possible to undertake experiments which appear to me to be absolutely indispensable in view of the difficulties met with by experts in ascertaining the age of the lesions.

In reply Mr. Rossignol said he was convinced that the proposed experiments would be very valuable and he would aid the society, but money was very essential and where shall it come from? I will cheerfully prepare a programme and have it ready for the January meeting.

The programme was presented at the January, 1900, meeting, discussed at the February meeting, amended by Prof. Nocard, and finally adopted, as follows:

The Society of Practical Veterinary Medicine, desiring to establish as accurately as possible the period of incubation of tuberculosis in bovines and approximately the age of tubercular lesions in bovines experimentally made, presents the following plan:

Ten Breton heifers and two milch cows of the same breed shall be bought and subjected to the following experiments:

1st. All these animals shall, not later than *two* days after their arrival at Pouilly le Fort, be subjected to the tuberculin test in order to discard any animal which might react.

2d. The committee appointed shall, four days after the tuberculin test of said animals, proceed as follows:

1. Four heifers shall be infected through the digestive organs in the following manner: tubercular material taken from the lungs of tuberculous animals shall be given them with their solid and liquid food.

II. Four heifers shall inhale tuberculous *dust.*

III. Two milch cows shall be infected by injecting into their teats an emulsion of tubercular material.

IV. One heifer shall be infected by an injection of tubercular emulsion into the trachea.

V. The last heifer be submitted to an intra-veinal injection of the same emulsion. The temperatures of the subjects shall be regularly taken A. M. and P. M.

Every eight days they shall be subjected to the tuberculin test, in order to determine as accurately as possible the exact time when they shall begin to react.

Thirty days later one subject from lot I; one subject from lot II; one subject from lot III; and the two subjects of lots IV and V shall be killed and autopsied with care; fifteen days later, that is, at the end of forty-five days, another subject from lots I and II and the last subject from lot III shall be killed.

The two animals remaining in lots I and II shall be killed at a later date to be fixed by the committee. In order to carry on these experiments it is thought best to ask for a subsidy from the Minister of Agriculture, the Conseils Generaux of Seine, of Seine et Oise and of Seine et Marne and also from the societies which were kind enough to contribute to the success of the experiments on peripneumonia.

This programme was unanimously adopted, and the association decided that the committee shall consist of all the members of the Board and of Messrs. Nocard, of Alfort; Moussu, of Alfort; Constant and Teyssandier, sanitary inspectors in State Department of Agriculture; Duprez, chief of sanitary office for Seine; Laquerriere, V. S., a delegate from Seine; Warnesson, Departmental Veterinarian for Seine et Oise; Fugio, of Paris; Vigier, of Paris; Hollard, of Guignes; Rabutin, Seine et Marne; Bavary, Jr., of Brie Comte; Robert, Seine et Marne; Paul Rossignol, of Melun.

The members of the society who desire to attend these experiments are requested to inform us to that effect.

Requests for subscriptions were sent to the Minister of Agri-

culture, to the Conseils Generaux of Seine, of Seine et Oise and Seine et Marne, also to the agricultural societies which had been kind enough to contribute for the experiments made by the Society of Practical Veterinary Medicine and by the Melun Agricultural Society, with the following result:

The Minister of Agriculture,	1000	francs
The Conseil General of Seine,	1000	"
The Society of Practical Veterinary Medicine,	1000	"
The Conseil General of Seine et Marne,	200	"
The Conseil General of Seine et Oise,	200	"
The Melun Agricultural Society,	300	"
The Seine et Oise Agricultural Society,	200	"
The Fontainebleau Agricultural Society,	100	"
	4000	

The thanks of this association are due to Mr. Duprey, Minister of Agriculture; Mr. Darbot, who interested the Minister in our project; Mr. Barrier, director of the Veterinary School of Alfort; Conseiller General of Seine, who has done effective work with the Conseil General of Seine, the Presidents and members of the Conseils Generaux of Seine, Seine et Marne, Seine et Oise, especially Messrs. Savary, Legendre and Brandin, and also the Presidents and members of the agricultural societies of Melun, Versailles and Fontainebleau, and finally the Pasteur Institute, which was so kind as to furnish us gratis the tuberculin required for our researches.

In accordance with the programme adopted March 14, 1900, thirteen Breton cattle were purchased by Mr. Guilloury, V.S., of Redon (elle et Vilaine).

They arrived at Pouilly le Fort the 1st of May, when, after a few days' rest, they were submitted to the tuberculin test.

Cow No. 6 gave the following temperatures: May 6th, 6 A. M., 39°5; 9 A. M., 38°7; noon, 38°8; 3 P. M., 40°2; being a suspicious animal she was condemned and killed May 8th. The temperatures recorded of the animals under observation on the 2d, 3d, 4th, 5th and 6th of May, are as follows:

MAY.	2	3	4	5		6			
				M.	S.	6 A. M.	9 A. M.	NOON	3 P. M.
Cow No. 1.....	38.4	38.5	38.6	38.5	38.1	39.	38.6	38.5	39.
Cow No. 2.....	37.6	37.8	39.3	39.	38.7	39.	38.5	38.8	39.1
Cow No. 3.....	38.2	38.	39.9	38.4	37.8	38.6	38.8	38.7	39.
Cow No. 3.....	38.	38 5	37.8	38.9	38.5	39.5	38.7	38.8	40.2
Cow No. 4.....	38.7	38.6	38.7	38.2	38.5	38.3	38.6	38.5	38.6
Cow No. 5.....	38.5	38.3	38.8	38.8	39.2	38.8	38.7	38.6	38.8
Cow No. 6.....	38.6	38.6	39.	38.7	39.1	39.	38.9	38.9	39.2
Cow No. 7.....	37.5	38.5	39.2	38.5	38.8	39.1	38.8	39.1	38.9
Cow No. 8	38.4	39.5	37.2	38.6	38.8	38.3	38.2	38.2	38.3
Cow No. 9.....	37.4	38.7	37.2	38.7	38.6	38.6	38.1	38.7	39.
Cow No. 10.....	37.6	38.8	38.4	38.8	38.9	38.7	38.4	38.3	38.8
Cow No. 11.....	38.4	38.6	38.6	38.5	38.5	38.5	38.6	38.5	38.6
Cow No. 12....	38.6	38.5	39.3	39.4	39.3	38.9	39.1	39.	39.4

(*To be continued.*)

FILARIOSIS OF THE SUSPENSORY LIGAMENT OF THE FETLOCK IN HORSES.*

By J. Pader, Veterinarian to the 19th Regiment of Artillery.
Extracted from the *Archives de Parasitologie*, by A. Liautard, M.D., V.M.

History and Nature of the Affection.—This affection of equines is due to *Filaria reticulata* (Diesing), Creplin.

This parasite, discovered in 1840 by Hermann and Blisweis, of the Veterinary Institute of Vienna, has been since observed by others—German, Austrian, Italian and Russian veterinarians. Professor Tshulsowski, of Kasan, has made of it a special study. The results of his observations are found in the *Notices de l'Institut Veterinaire de Kasan* (1884-1888), and reprinted in the Oesterr *Monatsch. für Thierhulkunde*, 1888.

The *filaria reticulata* was observed in France by Prof. Railliet in 1891 under the name of *Spiroptera reticulata*, which had received that name from Diesing. Students of Alfort, while dissecting, found a very fine worm in the cervical ligament of a

*This paper obtained the Pangoué prize of the Société Centrale de Medecine Veterinaire in 1900.

horse. This Railliet recognized as the parasite discovered by Hermann and Blisweis. Shortly after, Mr. Moussu found it in the perforatus and perforans tendons of a horse killed for dissection. Finally, M. Comte, of the Toulouse School, found this filaria in the suspensory ligament of the anterior leg of a horse, treated for lameness of that extremity.

It results from the bibliographical study of this parasite that the *filariosis* that it gives rise to is relatively little known, especially in France, where the few rare cases in the records are very incomplete. The parasite itself is little known, and its zoological study remains to be made.

Still, *filaria reticulata* is not rare in equines. Our observations justify us in believing that the majority of adult individuals of that species are affected with it—for the region of Nimes at least.* And if these cases of parasitism have not been observed oftener, it is because attention has not been called to them. It must also be said that occasions for minute examinations at post-mortem of the suspensory ligaments occur seldom.

We have said that this parasite has been found in the cervical ligament, in the flexor tendons of the foot, and in the suspensory ligament. Diesing has also observed it in the thickness of the coats of the collateral artery of the cannon and in the peritendinous connective tissue.

For ourselves we have seen it in the suspensory ligament, the cervical ligament, seldom in the connective tissue of the tendons and once only, out of more than 60 observations, in the thickness of the perforatus tendon ; and in this case, the parasite was single and represented by a thin thread which had not produced any apparent lesion in the tissue.

We cannot at present express an opinion as to the more or less frequency of the presence of filaria in the cervical ligament, as we have not looked specially in that direction†. But in the

* Where the author is in garrison.

† We, however, can affirm that it is quite common in the cervical ligament of horses killed at the abattoirs and particularly in those with thick necks. One may ask himself if there is not some relation between those *hanging necks* and the invasion of the ligament by the parasites. They encyst themselves into the connective tissue of the liga-

extremities of equines, at least in horses and mules (our observations on donkeys are not sufficiently numerous to justify approximation) it is on the *suspensory ligament of the fetlock* that it has its preferred lodging, preference which seems explained by the structure of that cord.

Like others, we have found it sometimes in the connective tissue, 8 or 10 times out of 60. It is then generally in the immediate neighborhood of the suspensory ligament. Once, however, we found a double parasitic nucleus, resting on the perforans tendons, but without being involved with it.

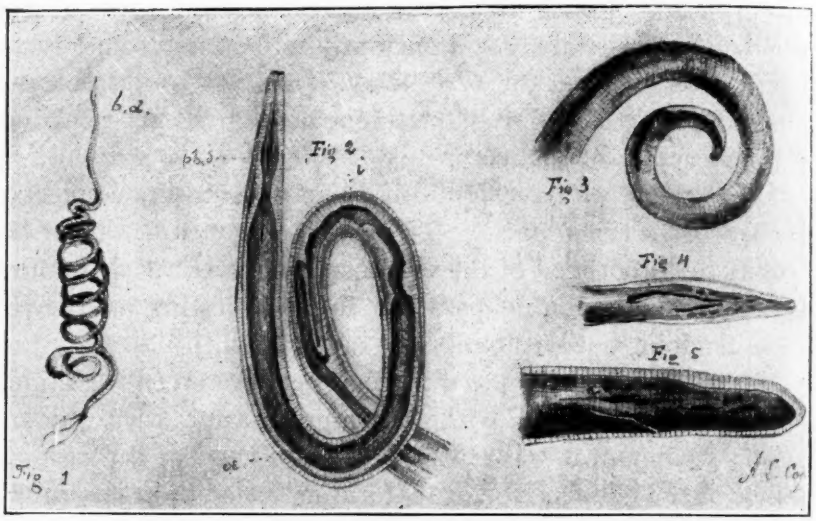
In the cases where the worm has been found in the middle of the connective tissue, without communication with the suspensory ligament, it was always curled on itself or through the meshes of the connective tissue, forming a nodule resembling a large dried bean in color and in size. To avoid repetition, we shall speak of these as *parasitic nodules.* They are formed by the body of the worm, rolled, curled in an inextricable manner with the connective fibres by an adenoid tissue and adipose cells. A more or less thick coat of fibres surrounds the whole.

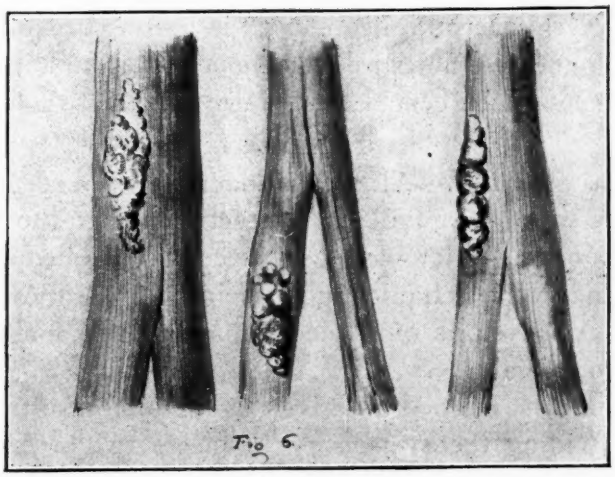
THE PARASITE.

How to Obtain It.—All means that have been used to obtain a complete worm have failed. Dissection under the magnifying glass or the microscope, of pieces of invaded ligament, maceration in various liquids and principally of solution of baryte of soda, have given us only pieces, more or less long, but impossible to assemble.

The simplest method has given us the best results. It consists in dividing the suspensory in pieces two or three centimetres long, and squeezing them between fine cloth. Pieces of worms, divided by the knife, are seen bulging out. With a fine forceps they are taken hold of and pulled out carefully until they break. In this way pieces of various lengths can be obtained, varying between one and several centimetres. By

ment and promote statosis Once dead they undergo calcification with the connective tissue surrounding, in such a way as to form irregular masses, sometimes sufficiently numerous to invade the entire cord of the ligament.





(*From the Archives de Parasitologie.*)

EXPLANATION OF THE FIGURES.

1. Anterior part of a female, b.s. genital end.
2. Anterior extremity of filaria reticulata. i, intestine; œ, œsophagus; ph, pharyn.
3. Posterior extremity of the male.
4. Terminal extremity, viewed by the ventral side, showing spicules and papillæ.
5. Posterior extremity of female.
6. Three fragments of suspensory ligament showing parasitic nodules.

patiently repeating these extractions one will obtain the extremities of the worm, which only are characteristic.

The thickest threads, which are also the more numerous, belong to the body of the female. The tight and sinuous curling does not allow the removal of long pieces—those are ordinarily between 2 and 6 centimetres. We exceptionally obtained once a thread 30 centimetres long, without the head or tail.

The male is finer in structure and more white. It forms less curls in its length, and its curls are looser; it yields more to the traction and furnishes longer pieces. We have easily had some 10 centimetres long; and once got one 15 centimetres without either head or tail.

Method of Study.—It is on the end pieces that the natural openings can be studied; the head and vulva of the female, the spicules and tubercles of the anal region of the male. All the elements necessary to establish the species may thus be studied. To study the internal organization, one must proceed by sections, either in making series upon the tendon itself or by incisions in celloidine.

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MACROSCOPIC LESIONS DUE TO THE PARASITE.

Externally, filariosis of the suspensory ligament can be overlooked and escape most minute exploration, while again it may give the impression of the ligament being enlarged to various degrees.

The aspect of the ligament on the amputated leg varies much according to the time the parasite has invaded it and the importance of the lesions it has produced. The form and color of the organ may not be altered. But most often, especially where the worms are in numbers, the ligament appears bigger than normally, paler in color, and more or less yellow-reddish in color. This swelling may involve only a part of the ligament or its entire structure. It may sometimes be twice or even three times its normal size. Sometimes the inferior branches

are affected, at others one more than the other, and then again they are both clear and the body of the ligament is swollen.

These lesions belong surely to the parasitism; they always are connected with the presence of the filaria, accompanied with the new formations it gives rise to.

In the case of recent invasion, the transverse section of the ligament shows nothing abnormal, or, at the very most, one may see in the interfasicular connective tissue one or two holes, resembling arterioles without coats. In pressing on the section, one will see oozing through these holes a whitish translucid thread, visible to the naked eye; it is the body of a nematode.

If the lesions are older and more numerous, the section is of dirty yellow or greyish color, with marbled lines of cicatricial tissue. The canalicular pores are numerous, and sometimes quite large, as having mingled several together. By pressure the worms are squeezed out, isolated in fragment or in bundles.

The connective tissue surrounding has changed its white nacreous aspect and become of a dirty yellow tint; it is thickened. On a longitudinal section of a dried piece one may, by translucidity, observe the spires and sinuosities formed by the nematode. Quite frequently the ligaments present on their surface irregular nodosities, more or less projecting, forming sometimes quite large nodules. These, one or two in number, seldom more, are observed once in every five or six cases of diseased ligaments. These swellings are formed by the worm, which has come out of the fibrous fasciculi of the ligament to come and curl itself in the peripheric connective threads.

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PATHOLOGICAL CONSEQUENCES OF FILARIOSIS OF THE SUSPENSORY LIGAMENT.

The pathological importance of filariosis of the suspensory ligament of the fetlock of the horse depends evidently on its frequency and its severity.

Frequency of the Affection.—It is very common. In a series

of 32 horses, of all ages, most of which were 15 to 20 years old, killed at the abattoirs, 26 were found affected with filaria most commonly on the four legs.

Among the 6 healthy ones, 2 were four and a half and five years old, one seven, the others fourteen. Among the 26, one was five years, two were six years. The one five years old had the tendons healthy, but three ligaments out of four had parasites. One of these ligaments had one of its bifurcations twice as big as the other. The horse of six years had the four ligaments diseased, and, without being apparently bigger than normal, were literally stuffed with filaria.

Besides that series we have a number of other animals, 3 donkeys and 9 mules, in which filaria were found in the suspensory ligament and also the perforatus tendon. This is the only case where we have found this organ diseased.

To resume: out of 43 animals, horses, donkeys or mules, only 8 were found free of parasitism of the suspensory ligament —an average of 82 per cent.

Severity of the Disease.—The severity of an affection of domestic animals, outside of the mortality that it may bring, depends on the functional disturbance it produces, and its greater or lesser facility of recovery.

Let us consider these two conditions :—Naturally one must heve a tendency to believe that so common an affection which has remained overlooked so long, cannot be serious.

This would be correct if one was certain that errors have not been committed on the origin of diseases which must be related to it and for which other causes have been attributed.

Unfortunately, this must have been the case in relation to certain blemishes of the extremities, tendinous or others, which ought to have been considered as due to the parasitic alterations of the suspensory ligament.

Let us first consider the blemish of the suspensory ligament itself.

We have found in our dissections about *two-thirds* of the ligaments, diseased at various degrees, were evidently swollen.

This swelling involved the whole or only part of the organ. In some it was limited to the branches of bifurcation, or even to one only ; sometimes the ligament was three times its size. We believe that in one-third of those animals the diagnosis could have been established during life by careful examination.

It is evident that a practitioner called to give his opinion might have diagnosed them in many cases as chronic sprains or distensions of ligaments. We made that error many times ourselves. And yet in all our 43 cases of filariosis that we have examined we have never found lesions belonging to sprains or distensions.

Such facts make one think. And we cannot ignore those statistics which have established such relation between the frequency of sprain of the tendons proper and the enlargement, the distension of the suspensory ligament. Truly, we do not deny this ; it is an accident that may occur; cases of rupture at the two bifurcations are recorded; but we believe that outside of acute accidental or traumatic cases, one must be very guarded in his diagnosis, and the question may always be asked to what extent can a primitive lesion of the tendon contribute to its giving away.

If, now, we consider the influence that the parasitic condition of the ligament can have upon the tendons and the fetlock apparatus, the question is less clear, although the influence cannot be doubted. Although the number of our observations is limited, we will nevertheless take them for basis.

By our table of statistics we find that in every one of our forty-three subjects, where the suspensory ligaments were more or less parasitic, *five* only had sprained tendon, more or less serious. In the five, it was the perforatus; in one both flexors were affected.

A fact to remark is, that in all five, neither the carpal nor tarsal sheaths were affected.

This seems to prove that lesion of the suspensory ligament does not necessarily imply disease of the tendons.

It is also to be remarked that it is always the perforatus

which was diseased. The perforans was only once affected with its congener.

We can therefore properly say that the parasitic alteration of the suspensory ligament promotes sprains of the tendons, and specially that of the perforatus.

Our statistics show also that out of our 43 subjects, 12 had hypertrophied carpal or tarsal sheaths. In those 12 the *tendons were absolutely sound*, while the ligaments were extensively diseased.

The sequelæ of the functional deficiency of the suspensory ligament is also certainly felt upon the fetlock ; but here again, more than anywhere else, it is difficult to define them exactly. It is about impossible to make a right distinction between what is due to conformation, excess of work, accidents, etc., and what belong to insufficiency in the means of support.

* * *

TREATMENT.

Having thus considered the pathological facts that belong to filariosis of the suspensory ligament, let us see if an efficacious treatment can be applied against it.

Unfortunately the answer must be negative. *There is no practical treatment known at present against ligamentous filariosis.* Surgical removal of the parasitic nodules has already been done, when in the connective tissue of the leg. It might be when the deposits are on the ligament itself. These operations are useless, as the growths are caused to disappear by resorption and are not likely to give rise to lameness or impede the action.

The principal indication is to be cautious and watchful every time one will be in the presence of certain tendinous lesions. When it will be principally swellings of the carpal sheath and of the suspensory ligament existing together, it will be necessary to take into consideration the character, acute or not, of those lesions, and take in careful consideration the history of the cases as far as the possibility of traumatism is concerned, and when those will be wanted, if the swelling is quite exten-

sive and little painful, remember that those lesions are frequently the stamp of filariosis.

One must be cautious and sometimes have courage enough to *do nothing*, or at least to abstain from all treatment likely to blemish the animal without doing any good.

And yet, if something must be done, let it be an inoffensive treatment, douches, massages, absorbing embrocations; the rest that they will impose will likely avoid more serious accidents.

Keep the heels of the foot cut low, to relieve the stretching of the suspensory ligament and of the perforatus.

* * *

To resume: Filariosis of the suspensory ligament in equines is a very common affection. It does not reach sufficient severity to interfere with the working function of an animal and consequently does not reduce his market value.

But it is quite frequently the cause of chronic swelling, weakness of the suspensory ligament and, as a consequence, of a compensating hypertrophy, principally of the carpal band and of tendinous and periarticular lesions.

There is reasons to believe that it enters for great portions in the cause of some blemishes, exclusively attributed to this day to accidents or overwork.

Its prophylaxy is still unknown, and we remain powerless against it to a therapeutical point of view.

THE DISSEMINATION OF INFECTIOUS DISEASES BY INSECTS.

By Charles F. Dawson, M. D., D. V. S., Baltimore, Md.

Probably few observant persons would doubt that one of the ways in which infectious diseases are disseminated is through the agency of insects. Those who are cognizant of the conditions necessary for the transportation of bacteria will admit that insects as a rule form an excellent means of carrying disease-producing bacteria from sick to healthy individuals. When we

consider the life-histories of the house-fly and the mosquito, that filth is a natural and seemingly necessary condition for their reproduction, can we doubt that when they arise from their filthy breeding places they carry with them large numbers of bacteria, some of which may be capable of producing disease? Can we doubt that in the sick-room of the ignorant and careless, where flies are allowed to alight upon tuberculous sputum, the dejections of cholera and typhoid patients, that they may and do transport these deadly enemies of mankind? When we consider the many favorable conditions for the spread of disease by this means, even in carefully-kept houses, the wonder is that we escape the constant dangers.

The literature on this subject shows that there are numerous reported cases, some of which are supported by experimental data, where all evidence points to the fact that the disease had been transmitted by insects.

In the *Medical Record* of Sept. 17, 1892, is the following:

"Bed-bugs, according to Dr. Dewevre, may be carriers of tuberculous contagion. His attention was called to this possibility by a case of tuberculosis occurring in a young man who slept in a bed formerly occupied by his brother, who died of the disease. The room had been thoroughly disinfected, but the bedstead for some reason had escaped this sanitary process. Dr. Dewevre observed that the young man had been bitten by the insects, and securing some of these, found them to be full of tubercle bacilli. He afterwards put some presumably healthy bugs in contact with tuberculous sputum, and was able to obtain from these, several weeks later, some excellent cultures of tubercle bacilli."

Sir William Moore (*Brit. Med. Journal*, Vol. I, p. 1154, 1893), while in the Indian service, writes as follows:

"When mentioning the necessity of protecting food from flies coming fresh from the evacuations of a cholera-stricken patient and so conveying the cholera poison to articles of food they might investigate. My impression, long held, that flies

conveyed cholera poison, received confirmation from the researches of Savtschenko. This observer states that the specific bacilli had been supplied to them; preparations from these flies showed numerous bacilli which had multiplied on the bodies of the flies. Cholera bacilli later from the bowels of these flies killed guinea-pigs as quickly as the original culture. In connection with the matter it may be mentioned that cholera chiefly prevails when flies are most numerous. If cholera may thus be spread, it is certainly probable that other diseases may be disseminated in a similar manner — enteric fever, phthisis, anthrax, leprosy, for example—especially in a country where, outside of hospitals, no care is taken as to the disposal or disinfection of excreta, or to the disinfection and washing of soiled clothing."

In Jonathan Hutchinson's "Archives of Surgery," Vol. VI, pp. 368-378, 1895, we find a chapter on flies, fleas, etc., as agents in the dissemination of disease. The authors say:

"Flies have, by many observers, been accused as the means of contagion in the ophthalmia which prevails in armies and especially in hot countries. I have long believed that they were responsible for much that we notice in reference to school ophthalmia in this country, and possibly other maladies. The hypothesis was one which seemed most probable in the instance of the school epidemic reported to the Ophthalmological Society two years ago. In this instance every precaution had been taken as regards the use of towels, handkerchiefs, etc., yet the disease had continued to spread. In several instances boys sleeping in adjoining beds had been attacked simultaneously, or in rapid succession. The disease had also spread in the city in which the school was situated, and it had been especially noted that it was at its height during the hot summer weather. Almost parallel observations have been made upon "erysipelas eczema," which recently prevailed as an epidemic in some of our workhouses. It too had been a disease of hot weather, had appeared to spread from bed to bed, although now and then attacking those who had been little exposed. There are, in

reference to the eyes, certain peculiarities which make them more likely to receive contagion in this way than any other part of the body. In hot weather flies become thirsty, and access to fluid is sometimes difficult; under the circumstances, the eyes offer special temptations, and are especially likely to be attacked during sleep. Open wounds offer like and even superior attractions, and it may have been the truth that flies were the real means of contagion in epidemics of sloughing phagedæna, which used to occasionally prevail in our hospitals.

"In connection with the above speculations, it is of much importance to remember that not only the proboscis of the fly but its feet may carry contagion, and, further, the period in which contagion may live under such conditions is quite unknown.

"Enough of suspicion has been established to make it most desirable that in the case of epidemics, spreading of maladies in wards or institutions, the most careful endeavors should be made to exterminate flies. It may even be a fact that flies are sometimes the means of contaminating the drinking water, milk, or other articles of food. In any maladies which prevail, especially in summer weather, the possibility of their influence should be kept in mind."

Other authors, Mendini and Bignami, look upon the mosquito as the direct agent in the transmission of malaria.

Lavaran, who has given so much time to the study of malaria, believes that not only is malaria spread by means of the mosquitoes, but that other diseases, such as tuberculosis, yellow fever, and cholera may also be carried by insects. He also believes that the bite of the tsetse, *glossina morsitans*, of Central Africa, is particularly dangerous because it inoculates its victim with a pathogenic hæmatozoan.

Dr. Theobald Smith has shown beyond doubt, that the parasite of southern cattle fever, a disease popularly known as Texas fever, is carried by the cattle-tick, and that when the ticks bite the cattle, they inoculate them with the parasite,

which lives at the expense of the red blood-cells, finally destroying them.

In a paper entitled "The Etiology of Yellow Fever," read before the Pan-American Medical Congress in Havana, Cuba, February 4–7, 1901, Drs. Reed, Carroll and Agramonte, surgeons U. S. A., show quite conclusively that yellow fever is an insect-borne disease. While they were able to produce it, by subjecting willing patients to the bites of the mosquito (*culex fasciatus*), they failed to discover the identity of the causative organism. They conclude that *B. icteroides* of Sanarelli stands in no causative relation to the disease, but merely fills the rôle of a secondary invader. That mosquitoes serve as the intermediate host of the parasite of yellow fever, and are absolutely necessary for the ordinary spread of that disease. However, the disease may be produced experimentally by the inoculation of blood from an infected person. That a house may be said to be infected, only when there are present in it mosquitoes which have bitten persons suffering from the disease, and that the disinfection of clothing, bedding and merchandise supposedly contaminated by contact with the disease, is unnecessary. These observations are of immense scientific and economic importance. They agree closely with the facts, as we now know them, thanks to the brilliant researches of Theobald Smith, concerning the etiology of Texas cattle fever. Possibly, in the near future, it will be shown that, as in Texas fever, the parasite of yellow fever is either a protozoan and, therefore, at present, uncultivatable by our primitive methods, or that it is a bacterium having such strict parasitic characters that it cannot be cultivated artificially; or that it is, like the organism of bovine contagious pleuropneumonia, invisible because of its extreme minuteness.

In order to show that disease agents may be carried by insects to the animal kingdom, and especially by flies, I captured one with a pair of sterilized forceps from the exposed abdominal viscera of an experimental guinea-pig which had died of symptomatic anthrax. The fly was placed under the skin of a healthy

guinea-pig, with the result that it died within 18 hours of a typical attack of symptomatic anthrax. I was also able to secure the bacillus from the local lesion and liver of the dead guinea-pig. Control experiments were not considered necessary, as in the event of other flies not infected with symptomatic anthrax proving pathogenic, we should still prove that flies carry pathogenic organisms.

That they do ordinarily carry pathogenic organisms was proven by another experiment in which a fly that had been in contact with the affected organs of a tuberculous guinea-pig was placed under the skin of a healthy guinea-pig. The pig died on the second day of malignant œdema, showing that the bacilli of malignant œdema, or their spores, were adherent to or in the fly's body coincidently with its infection with the tubercle bacillus. Further, a fly was allowed to partake of a liquid culture of the bacterium of swine plague. This bacterium is uniformly fatal to rabbits. The infected fly was placed under the skin of a rabbit, with the result that it died within 24 hours, and I was able to demonstrate the presence of the bacterium of swine plague in the liver and blood of the dead animal.

In another experiment made to decide the question of flies being able to convey tuberculosis by means of their excrement when fed on material containing the tubercle bacillus, I captured a vigorous fly, placed it under a bell-glass along with a cover-glass on which was spread some of the tubercle film from a glycerine-agar culture of the bacillus. In about one hour, the infected cover-glass was removed and fresh clean ones were slid in under the bell-jar. The next day several of them were "specked." A microscopic examination of one of the "specks" showed that the bacillus had passed through the alimentary canal of the fly and had been deposited on the cover-glass with the excrement. In order to determine if the bacilli were alive and virulent, one of the "specked" cover-glasses was placed in a ½ cc. of glycerine-bouillon and shaken in order to wash off the excrement. A healthy guinea-pig was inoculated intra-abdominally with this suspension, with the result that when two

months later the guinea-pig was chloroformed, it was found to be in an advanced stage of tuberculosis. The liver was greatly swollen and exhibited green and yellow necrosed areas. The spleen was enlarged about four times and was extremely diseased. The omentum was the seat of an extensive infiltration of millet-seed-sized tubercles. The lymphatic glandular system throughout was also involved, the individual glands being enlarged from ten to twenty times, and upon section were found to be hard and gritty.

It was also demonstrated by an experiment upon rabbits similar in plan to the foregoing, that hog-cholera can be transmitted by means of flies.

Vegetable pathologists have shown that certain infectious plant diseases are distributed by insects.

Several years ago, Mr. Waite, of the Department of Agriculture, called my attention to an experiment he was carrying on, in which he was repeating his former observations on the distribution of the "pear-blight" organism. Near the pear tree upon which he was experimenting there was a bee hive. Certain of the lower limbs of the tree had been inoculated with the "pear-blight" organism, and some of the upper limbs were protected by mosquito netting. The bees could be seen visiting the trees, including the infected limbs. "Pear-blight" soon appeared in all the upper limbs not protected by the nettiug.

Dr. Erwin F. Smith, of the Department of Agriculture, has shown in a bulletin on "A Bacterial Disease of the Tomato, Egg-Plant and Irish Potato," that the Colorado potato beetle is a factor in distributing that disease. Dr. Smith has also shown by control experiments that an infectious disease in cucurbits is distributed by certain living insects. The insects were sprayed with the liquid cultures of the bacillus (*B. tracheiphilus*), and were then turned loose upon the plants. During a period of nine months in which the experiment was carried on, none of the plants which were protected by being covered with bell-glasses, became infected, while the unprotected ones succumbed to the disease.

MALIGNANT CORONITIS.

By Coleman Nockolds, M.D., V.S., 1st U. S. Cavalry, Batangas, P.I.

I call this trouble "Malignant Coronitis" for want of a better term. It is a disease in which that part of the foot directly under the coronary band becomes inflamed, swells up, and eventually bursts, giving rise to a profuse discharge of purulent matter.

During the winter of 1898-99 there occurred an outbreak in and around Grand Rapids, Michigan, all classes of horses being affected. Whether the etiology of the disease that occurred during the winter in Michigan, and that which now exists among our troop horses and transportation animals in this portion of the Philippines is identical, I am unable to determine. In both instances micrococci and streptococci were very much in evidence in the discharges from the affected feet, but, although the post human doctors and myself have examined many specimens of discharge from different animals, we have been unable to find any specific cause. In Michigan we attributed the disease in question due chiefly to the effects of salt used to melt snow upon the trolley tracks, and in part to frost, and the irritating effects of mud and slush occurring as the result of a thaw. There are, of course, neither salt, frost, nor thaws here, but this outbreak certainly commenced during the rainy season, when the animals had to stand in mud from a foot to several feet in depth. There is no doubt but what this tropical mud is very rich in bacteria of many varieties; the least scratch upon the legs or body of an animal after coming in contact with this mud usually turns into an unhealthy ulcer.

As mentioned, this disease first attacked the feet of several horses and mules during the rainy season, which ended in November, and it is now April, and we have had but little rain since November, but every now and then a fresh case occurs among the troop horses or transportation animals. The first sign noticed is a slight lameness, soon a swelling appears on the coronary band, generally well along towards the heel.

The point of the swelling is hot and tender, and in a few days the tumor breaks and discharges a yellowish pus, streaked with blood. If left alone the inflammatory process works along the coronary band towards the front part of the foot, as is shown by the progressive swellings and discharging, until the whole length of the coronet is affected and perforated from heel to heel. Usually after the abscess bursts the animal is not as lame as during the forming of same. Not only does the disease attack the superficial structures, but there are sinuses formed, which penetrate the deeper parts of the foot, behind the lateral cartilage into the fatty cushion, deep down between the horny wall and coffin bone, attacking the sensitive laminæ; finally the joints become attacked, the capsular membranes, bursæ, and even the articulations, and often there occurs separation of the horny box from the foot. In severe cases constitutional disturbances occur, which result in fever, anorexia, and emaciation.

About eighty cases came under my observation during the outbreak in Michigan, and the majority were sent to the glue factory. Of four that were operated upon three made good recoveries and one was destroyed.

Case I.—A standard-bred mare, used by a physician to make professional calls about city. Liveryman had been treating mare with poultices, caustics, etc., for about three weeks, when a veterinarian showed up who guaranteed to cure the foot in a month at a certain figure, and animal was taken to his hospital. At the end of that month, the animal was examined by me and there were present on the inside quarter of the coronet of the near hind foot two openings about the size of quarters, from which was running a copious discharge of pus. The heel of the foot was much swollen, probing showing several sinuses running down towards the sole and one in towards the fatty cushion. These sinuses were freely incised and horse-hair setons were passed from one opening on coronary band to frog, and the other from coronet to about two-thirds the distance from coronet to ground surface of wall, coming out through a hole made through the horny wall, so as to establish free drainage. The wounds were

dressed by injections of solution of perchloride of mercury, and the external openings dusted with iodoform. The animal was also given a laxative, followed by powders of iron and arsenic internally. After ten days the setons were removed and the wounds rapidly closed. In three weeks, as the animal walked and trotted sound, she was put to work and behaved very well for about a month, when she again went lame and a swelling appeared upon the coronet about one inch and a half in front of the most forward original wound. Soon the swelling burst and the foot was apparently in worse shape than at first. The mare was cast and an anæsthetic given; a section of the wall of the hoof was removed by sawing through about one inch from the ground surface and separating it above from coronary band and stripping it off. About one-third of the wall was removed in this manner; the sinuses were then thoroughly curetted and cauterized with the thermo-cautery (which, by the way, is not a good instrument to use when part operated upon is very moist), and dressed with iodoform gauze, oakum and bandaged. After a week the patient was sent out to a pasture owned by a veterinarian, who attended closely to the injury. This was in May. The following September the mare was shod with suitable shoes and put to work, and I have reason to believe that, with the exception of a slight irregularity of the hoof, the patient has made a good recovery.

Case II.—Grey gelding, aged, belonging to Little Sisters of the Poor, and used to draw a heavy carriage. This was a similar case, and was operated on at once by the last method mentioned. As there was apparently no improvement after two months treatment, and as the animal was almost valueless, even when sound, destruction was advised.

Case III.—Work horse, used for heavy draught, was operated on by slitting the sinuses and passing hot iron through sinuses and out at the side of the wall and introducing seton for drainage, dressing with strong mercuric chloride solution.

Case IV.—About same condition as Case No. III, and operated upon by same method, both making a good recovery and

returning to work in about four weeks. The cases occurred during the time that there were a large number of horses suffering from the same condition during the winter. As spring advanced the number of animals attacked gradually decreased and the trouble ended before the hot weather came on.

The number of horses suffering from this foot disease in my regiment at the end of the rainy season in November was: Troop I, ten; Troop L, ten; Troop K, five; Troop M, nine, band horses, two; transportation animals at post, six; one of my own saddle horses. Since that time various other cases have occurred.

Troop I has been stationed here all the time and Troop K is stationed only six miles from here, so that I have been able to keep tally on those horses. Troop L was ordered away, and, although I operated on all diseased feet before they left, reports from them are not altogether satisfactory. Troop M I have seen only once; they are in charge of a civilian veterinarian, being too far away for me to visit often. The veterinarian in charge reports that the disease is not growing rapidly less. The band horses and transportation animals are of course always here.

Among the various treatments that have been used by the troop farriers and the quartermaster's veterinarian stationed at this post and myself, are:

(1) Introduction of crystals of blue vitriol into sinuses.

(2) Nitrate of silver (stick).

(3) Poultice of flaxseed or wet dressings of corrosive sublimate.

(4) Injections of creolin or solutions of creolin.

(5) Iodoform dressings.

(6) Curetting and injecting of solutions of formalin, or solution of nitrate of silver.

(7) Burning with round iron and introducing seton with exit through wall of hoof, about one inch from ground surface, and using corrosive sublimate solutions.

(8) Denuding foot of horn from diseased portion, curetting, cauterizing and antiseptic dressings of iodoform, oakum, bandage.

Of these methods the first five are, of course, useless, except in cases of very slight severity, and only affected very superficially, in which cases injections of creolin solution and dusting with iodoform are sufficient. The sixth method was successful in a few cases, but is generally followed by the appearance of a new swelling further forward on the coronet. I have noticed the best results from the seventh method of treatment. If the disease should continue or appear again after treating in this way, the removal of that portion of the horn and denuding affected area will usually be followed by good results. Of course, the great objection, especially with troop horses, is the length of time that such an operation keeps the animal from duty, and often an irregularity of the growth of new horn. However, this does not interfere with the usefulness of a troop horse. Sometimes a too luxuriant growth of granulation tissue occurs, which can be remedied with the scissors and nitric acid or other caustic.

I have yet to hear of a simple effective treatment for this class of cases, and will be very grateful to any of my *confrères* who will suggest some routine line of treatment for these bad feet.

We are fortunate in not being troubled with many diseases out here. The native ponies suffer considerably from glanders, and we have had a few cases among the public animals. My own horse had to be destroyed because of his bad foot becoming infected with the *bacillus malleus*, as was plainly demonstrated by its not being amenable to treatment, the general signs of farcy, and the appearance of the germ in the discharge from the ulcers which occurred upon the leg, and which apparently started from the bad foot.

Specific pan-ophthalmia is common among the native ponies, and am sorry to state that a number of animals in our regiment have become infected. Will report upon this later on. Other troubles among troop horses out here are a few cases of founder, colic, heat exhaustion, thrush and broncho-pneumonia, and a miasmatic fever. The general health of the government animals is very good.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

PERFECT OCCLUSION OF UTERUS IN COW.

By JOHN MINCHIN, V. S., Goshen, N. Y.

On April 6th was called to see a cow that was making very strong efforts at parturition all day, but no sign of calf could be found. Got to the place about 8 P. M. Found several men on hand; did not know there were any examinations for the calf till I made it myself. When I reported the situation one of the party said: "I told you so," and told me he did not see what could be done. There was not the least sign of any place where I could insert one finger—everything as tight as a drum. The cow would lie down, stretch out and moan, strain violently, etc. As this was the second case of the kind I had ever seen, I told the owner I thought there was very little chance to save the cow, even if I tried to use the scalpel, as I had never done so before, and left it for them to say what to do. All concluded it would be a very dangerous "job," and to let the poor thing die, which I did. But here is the chief cause of my letter—I went to the "knackers," or, as we call it, the "boneyard," and made a post-mortem, which revealed the uterus as tight as a drumhead; not the remotest sign of the os, and when cut through was almost one inch thick, and dilated to its full extent. Then, and there, I concluded if I ever met another similar case to try the knife, and here it is. On the 23d of the same month had another call, but this time could get one finger in the os, and, no matter how I tried, no more. The cow was in a great state of tenesmus, and would bawl when my hand entered. She would not stand. I procured my slings; had a man to hold her by the nose, one on each side, when I made her hind parts a little elevated. Made lateral cut both ways, and with some traction delivered her of the trouble. As there was quite some hæmorrhage I irrigated the parts for fifteen or twenty minutes with plenty of cold water; a few spoonfuls of chloride of sodium thrown in. My syringe is an old English one, with ball at bottom, which forces the solution just where I want it. Now, the great surprise to me. I let the cow down easily, gave her a stimulant of whiskey, had her fed on soft mashes, etc. And at present (June 4) is doing well.

Although I have never seen anything of the kind before, and don't claim to be infallible, I write to you to let you know what may be done where we least expect it. I hope this may be of some value to the veterinary profession, and to see it on record in the REVIEW.

RECOVERY FROM RABIES—SOME INTERESTING QUESTIONS FOR REVIEW READERS.

By A. JASME, V.S., Savannah, Ga.

I wish to put before you a case that I consider very interesting, and ask your opinion. The subjects are, an English setter bitch, 5 years old, her pup, a year old at the time, very gentle.

December 21, 1900, the mother bit the daughter badly, on several occasions. On 23d, while hunting, the mother was very *cranky* and bit daughter several times. On 23d, P. M. (8 or 9 o'clock), very acute case of dumb rabies in the mother; she was destroyed on the 25th. No doubt as to the character of the disease, which is often met with in Savannah.

On January 23d, 1901, the *daughter* showed all the symptoms of dumb rabies, and was all day unable to close her jaws, eat or drink. On the 24th no difference in symptoms. 25th, as I was thinking that I must part with my last dog, and thinking of chloroform, etc., etc., the groom informs me that he succeeded in making *her* swallow a piece of meat. Not being desirous to destroy her anyway, I gave 10 grs. of calomel, thinking I was only prolonging agony. In the afternoon, she ate a little more, and I think could swallow a little water. On the 26th she ate and drank, although with much difficulty, and recovery was complete two days later.

Now, I do not see any possible doubt as to the diagnosis. She is now entirely well. I have read in the reports of the Bureau of Animal Industry that subjects inoculated with rabid virus have recovered after showing symptoms of the disease. I had much experience with the disease. I shall therefore contend that the daughter had rabies and recovered. I would like to know your opinion in the matter. Also, is this dog, living and lying at my feet now, PROOF against attacks of rabies? That is, does an attack confer immunity?

Will also state for information that I gave the mother on December 24th, 27 grains of morphine in 8 hours, using every hour 3 gr. vet. tabl., hypodermically, when she was not much asleep yet, as she would raise her head and wag her tail when

called after taking 9 tablets. I had to destroy her with aconitine, morphine seeming useless.

LAPAROTOMY IN THE BITCH, WITH OVARIECTOMY AND REMOVAL OF THE PREGNANT UTERUS, CONJOINED WITH TEARING LOOSE OF THE LEFT KIDNEY THROUGH ACCIDENT — RECOVERY.

By C. H. JEWELL, D.V.M., Dunkirk, N. Y.

In November, 1900, I was called upon to perform ovariectomy upon a young spaniel bitch, about eight months old. I saw the animal was pregnant, and asked the owner how far along she was, and he stated about four weeks. Thinking I could easily operate if no farther in gestation, I proceeded with the operation. Upon entering the abdominal cavity I saw the animal was at least seven weeks along, but I proceeded with the operation at the request of the owner. In withdrawing the pregnant cornu I tore loose the left kidney, which I proceeded to bring to the exterior with the pregnant horn; removed the ovary, and brought the other cornu to view, and tore loose the gland. Then emasculated the entire uterus with my fingers and sutured the wound. The animal was very weak following the operation, and had considerable hæmorrhage. The next day appeared quite smart and made a complete recovery. The operation convinced me that laparotomy in the bitch can be easily performed, and removing of one kidney in the dog is without serious sequelæ.

LOSS OF PORTION OF THE TONGUE IN THE HORSE BY ACCIDENT —NO SERIOUS CONSEQUENCES.

By C. H. JEWELL, D.V.M., Dunkirk, N. Y.

In August, 1900, I was called to see a gelding, about 14 years old, which the owner said had lost a portion of his tongue by some accident which he could not explain, since the portion was never found. The animal was away from home at time, and accident was not noticed until reaching home. The owner was greatly alarmed, thinking the animal must be killed, but I informed him he would get along just as well without the lost portion as he did before. The part torn away was anterior to the frænum linguæ, consisting of fully four inches. I advised as treatment feeding gruels, followed by cleansing of the mouth and then washing with creolin solution, 3 per cent.. The animal got very thin in flesh, but made a good recovery, and

now feeds as well as any animal with the exception of requiring a little more time to eat.

PARTURIENT PARESIS.*

By R. C. HILL, V. S., West Alexandria, O.

Having noticed different opinions on the curative effects of iodide of potassium in the treatment of parturient paresis, I have watched with greater interest and kept a record of the last 12 cases. I will not detail each and every case, as the symptoms are apparently the same. Of course there is a difference in the severity of the attacks, owing to how soon it has followed parturition, etc., but as a rule, when the veterinarian is called, the patient is unable to rise and lies in that same old position.

Mode of Treatment.—Wash off udder with tolerably warm water. Have instrument thoroughly sterilized. Dissolve iodide potassium, ℥ ij, in a quart of water that has been boiled. Have water as warm as you could drink it without any inconvenience at time of injection, and inject one-half pint in each teat. Turn the patient on her back and work the solution well through the udder. Then place the patient on her sternum and support her there. Draw off the urine, cover patient well, and give nux vomica, ℥ ij, on tongue, following with the nux every three hours. Leave irritant to be applied on lumbar region in an hour. With this treatment 75 per cent. recovered, and in every case, *except one*, the patient was on her feet within six hours. This one I gave a second injection at bed time, and left her go for the night. On arrival next morning she was up and eating.

I do not wish to be radical, but the three cases that died were no fair test for the iodide of potassium, as they had been given large drenches, horns bored, tail split, etc.

EVERSION OF UTERUS.†

By R. C. HILL, V. S., West Alexandria, O.

Last spring I was called to see a cow which had complete eversion of the uterus. The owner stated that he noticed her straining in the evening and thought she would have the calf by morning.

So, I suppose from all appearances, the uterus had been out most of the night, for it was so congested that it was the color of liver and full of dirt and chaff. But, luckily, the after-birth

* Read before Ohio State Veterinary Medical Association.
† Read before Ohio State Veterinary Medical Association.

was still on, which protected the uterus to a great extent. I started at once to get it in shape to return—washed it off with warm water; had a sheet held under to support it, and removed the after-birth; then washed it with antiseptic wash. I took part of the sheet and laid over it, and started it back. I got it just at the turning point when through went my fist.

But I went ahead and returned it, thinking if I could get good contraction started it would be all right. I got ice and started to pack her; used about a bucketful, the pieces being as large as my two fists, and it worked very nice. Put on a truss for safety, went to see her next day, and she was in better shape than a good many I had that I did'nt ram a hole through the uterus.

MARE WITH TWIN MULE COLTS.

By B. O. MINGE, M. D. V., Maryville, Mo.

On May 29 I was called out to the country to arrest the hæmorrhage from a horse cut on the wire fence, and while there I noticed a mare grazing in the pasture, with two mule colts, and upon inquiring if both of those colts were hers I was informed that they were. The mare gave birth to both colts about 6 o'clock Saturday, May 18, and had no trouble whatever—anterior presentation, with the fore legs extended under the chin. One colt was up and sucking in fifteen minutes, and the other one in thirty minutes. One is a bay male mule colt and the other a black mare mule colt. They are now about two weeks old and are doing splendidly. In fact, are a fine looking pair. The mare has done all right and been bred again—and everything is lovely.

DEPARTMENT OF SURGERY.

By L. A. AND E. MERILLAT,

Chicago Veterinary College, 2537-39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

This series of articles will be a review of what all veterinarians have carefully studied during their college course, with probably one or two new operations that have sprung into existence during the past few years. We hope that what will be considered upon these subjects will be interesting to the read-

ers of the department. We will begin with the operations upon the eye, and will be pleased to publish any veterinarian's methods of operating upon the eye, ear and upper air passages when presented to us for publication. The surgery of the eye, which we shall briefly consider, will be divided as follows:

A. Operation upon the eyeball.
1. Operation for pterygium.
2. " " symblepharon.
3. " " trachoma.
4. Periotomy.
5. Surgical treatment of superficial wounds of eyeball.
6. Subconjunctival injections.
7. Tattooing of cornea.
8. Sclerotomy.
9. Operation for staphyloma.
10. Enucleation of eyeball.
11. Evisceration of eyeball.
12. Iridotomy.
13. Iridectomy.
14. Operations upon lens.

B. Surgery of appendages of the eye.
1. Removal of eyelashes.
2. Operation upon canthus.
3. Ablation of chalazion.
4. Operation for entropia and trachiasis.
5. Surgical treatment of ectropia.
6. Operation for ptosis.
7. Irrigation of lachrymal duct.
8. Excision of lachrymal sac.
9. Excision of lachrymal gland.
10. Surgical treatment of diseases of membrana nictitans.
11. Surgical treatment for blepharoptosis.

C. Operations on orbit.
1. Treatment of fracture.
2. Removal of tumors from orbit.
3. Surgical treatment of abscesses.
4. Surgical treatment of orbital fistulæ.

D. Prosthesis oculi.

A. *Operations upon the Eyeball.* — In ophthalmic surgery, every detail of asepsis must be practiced at all times, no matter how simple the procedure may appear; all instruments, needles, suturing material and dressings must be surgically clean; they should be boiled and placed in an antiseptic bath until needed.

The bath used for this purpose may consist of absolute alcohol, or a 1.20 carbolic acid solution. The best method of sterilizing small and sharp instruments is by the use of formaldehyde vapor. Dressings should be modified to suit each case, and consist of an antiseptic gauze, applied either moist or dry. Small pieces of sterilized gauze are preferable to sponges to remove blood from the seat of operation. If sponges are used they should be sterilized by heat and washed in an antiseptic solution, or a normal salt solution made with sterilized water. Silk or catgut sutures may be used; if either is used it must be properly prepared and kept in alcohol or bichloride of mercury (1.1000). The indication for general anæsthetics in ophthalmic surgery is limited to operations requiring delicate manipulation and those in which the pain cannot be relieved by local anæsthetics, such as enucleation.

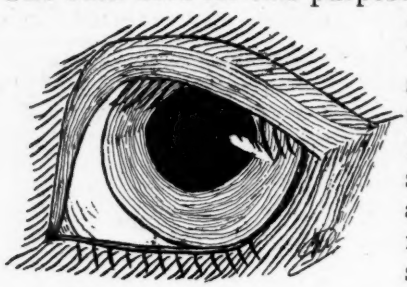


FIG. 52.
NORMAL HORSE'S EYE.

General Preparation of Patient.— The patient must be placed in the best possible physical condition. The administration of a laxative a few days prior to the operation is advisable. The patient should be free from chronic diseases, and must not be subjected to an ophthalmic operation when affected with any acute disease. Patients with pulmonary or renal diseases should not be operated upon during cold weather, and those that are plethoric during hot weather.

Preparation of Skin Around the Eye.—It is necessary to shave the hair and clean the skin around the seat of the operation. After removing the hair the skin must be washed with soap and hot water, then with etherial soap or alcohol, followed by a bichloride or formalin solution. Irritating solutions, such as bichloride or formalin, must not be allowed to enter the eye; for this reason the ciliary margin must be cleaned with soap and water and very mild antiseptics. When the site has been thus prepared, it must be covered with a compress of cotton or lint saturated with a weak antiseptic solution, and kept in position for at least an hour before operating. The preparation of the seat of the operation depends much upon the nature of the operation. It is impossible to make the conjunctival sac aseptic, and irritating antiseptics must never be used in attempting to

make it so; but it may be irrigated with a 4 per cent. solution of boric acid, or a normal salt solution. The inner canthus can never be thoroughly cleaned on account of being connected with the nostril by the lachrymal canal, which is a conduit for pus cocci; therefore, when operations are performed in this region all that is necessary is to wash the parts with soap and water and a weak solution of boric acid or a normal salt solution, which will reduce the vitality and number of pus organisms. The lachrymal canal should be irrigated and thoroughly cleaned, which will obviate the accumulation of tears and lessen the danger of infection. If the canal is open the passage of the lachrymal discharge through it to the nose will convey the pus cocci away from the eye, and lessen the danger of infection from this source. When the canal cannot be opened, the inner canthus may be closed with iodoform to prevent the lachrymal fluid from being infected in this manner.

(A) OPERATION UPON THE EYEBALL.—The conjunctiva covering the eyeball is a very vascular structure and when wounded, either accidentally or surgically, it heals very rapidly; large wounds in it can be successfully treated by a thorough cleaning and carefully suturing them. The after-treatment, in most cases, requires nothing more than protection; this can be accomplished by closing the eyelid, and applying a hood with a compress adjusted over the eye.

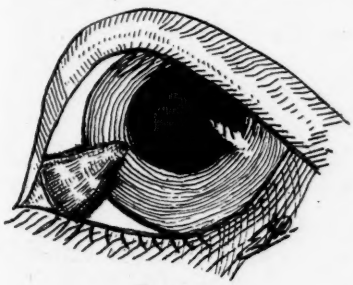


FIG. 54.
PTERYGIUM.

1. *Operation for Pterygium.*—Pterygia are patches of hypertrophied conjunctiva which extend from the nasal canthus to the cornea; they are usually triangular in shape with the base at the canthus and the apex pointing toward the pupil. The instruments needed for the operation are an eye speculum, sharp-pointed knife, pair of dissecting forceps, pair of scissors, probe, needles and sutures.

Operation.—In most every instance a local anæsthetic is sufficient for the operation, which should be performed in the simplest possible manner. It is necessary to save as much of the conjunctiva as possible, and to remove all of the diseased tissue from the corneal surface, and when possible that of the scleral surface also. This, however, cannot always be accomplished, especially when the base is very broad. If the ptery-

gium is narrow the operation is simple and very successful. The object in every case is to thoroughly remove all the growth from the cornea, and this is done by beginning to dissect it at the apex, and grasp it with a pair of forceps, and with gentle traction separate it from the anterior limiting membrane (*Rev., XXV., p. 208*). If all of the diseased tissue is not removed in this way, the remnants must be scraped out with a sharp knife and let the denuded space near the cornea cicatrize, which generally leaves no opacity. The actual cautery has been recommended by some operators in removing diseased tissue, but would not recommend it when knife will answer the purpose. During the last few years, electro-cautery has also been used for this purpose, but cautery used for such purposes is not an advisable surgical procedure. When the wedge shaped structure is removed, the conjunctiva must be loosened along the edges and the edges brought as near to each other as possible by the careful application of sutures. After the wound has been well washed with a boric acid solution, normal salt solution or with sterilized water, the eye should be closed with sterilized lint, gauze or cotton and bandage applied over the eye, and over this a hood should be securely fastened. The wound may be redressed every day and the stitches allowed to remain as long as they do not irritate, which is generally three or four days. When the stitches are removed it is not necessary to dress the wound, but the eye must be kept clean by washing it occasionally; the patient must be kept in a place where the light is not too bright. It is not advisable to keep such patients in a very dark place during convalescence.

Operation for Symblepharon.—Symblepharon is the adhesion of the eyelid to the eyeball, or to each other. This condition is generally a congenital anomaly, but may follow neglected wounds of the eyelids or diseases which involve the inner surface of the eyelid. The condition is observed in various forms; those which adhere to the eyeball usually involve the lower lid; those in which both eyelids unite (*ankyloblepharon*) seldom adhere to the globe. The most common of these conditions is the union of the lids at the external angle (*blephrophymosis*), which lessens the palpebral opening.

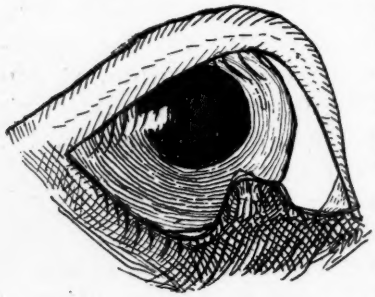


FIG. 53.
SYMBLEPHARON.

Operation.—The instruments necessary for the operation are: eye speculum, probe, scissors, dissecting forceps, spatula, needles, sutures and several sharp-pointed knives. When we have but slight adhesions, a local anæsthetic is all that is necessary, but when they are extensive and require careful dissection it is best to administer a general anæsthetic. When the lid adheres to the ball, the operator should first attempt to separate them with a probe or spatula, but if the adhesions are too firm they must be dissected apart and a rubber shield placed between the lid and eyeball and left in place until the parts have healed. When the eyelid is distorted it must be shaped as near normal as possible by surgical means. If it becomes necessary to clean the parts, the shield must be removed during the intervals of cleaning, and thoroughly washed before replacing it. The eye must be covered with gauze or cotton and bandaged or covered with a hood.

When the eyelids are united to one another and not to the ball the operation is very simple and with careful attention the results are generally good. In such cases the lids are separated with a knife, making the incision as long as necessary to make the palpebral opening as long as its fellow. The condition of these new formed edges will depend much upon the care that they receive. The conjunctiva may be dissected from the lids for a short distance along the edges and sutured over the new formed edges, but this is not always necessary and in some cases not advisable, because the sutures increase the danger of infection and cause irritation. Very good results follow careful dressing without sutures. Aseptic dressings of gauze placed between the edges and covered with cotton and properly bandaged is generally all that is necessary.

SURGICAL ITEMS.

In the *Journal of the American Medical Association*, June 15, 1901, we notice an editorial on the increase of fatal cases of tetanus in large cities resulting from wounds inflicted by explosives used in celebrating the Fourth of July, in which is mentioned that "According to Wells, 27 boys ranging from 10 to 17 died from Fourth of July wounds in Chicago last year. * * * The period of incubation varied from five to eleven days after the accident"; and it recommends that such wounds be treated surgically and a prophylactic dose of tetanus antitoxin administered. (5cc.) The editorial also refers to the success that veterinarians have had with this antitoxin as a prophylactic meas-

ure; and to its inefficiency as a curative agent. The use of tetanus antitoxin as a prophylactic measure was discussed at the last meeting of the Chicago Veterinary Association. We were surprised to hear of the number of veterinarians that use it for this purpose; and of the number of firms that demand that their veterinarians treat all nail-pricks and suspicious wounds with tetanus antitoxin. Dr. Hughes mentioned upon this occasion that a few weeks prior to the meeting in question, he punctured his hand with a piece of wire which he had removed from a horse's foot; two or three days' later the horse developed tetanus, and, fearing that he might also be infected, he requested his physician to treat him with tetanus antitoxin, which was done as a prophylactic measure. The horse developed tetanus, but Dr. Hughes did not.—(*E. M.*)

Chloroform versus Chloral Hydrate in Surgical Anæsthesia of the Horse [Written for the Department of Surgery by W. E. A. Wyman, M. D. V., V. S., Milwaukee, Wis.]—The more or less perfect means of restraint of to-day apparently permit the surgeon the performance of most operations without employing anæsthetics. Practice, nevertheless, teaches a different lesson. There is no means of restraint known to-day, starting with the latest introduction—Dollar's operating table—down to the numerous hobbles, harnesses, etc., by which the horse can be held with safety to himself and surgically quiet—an important feature of aseptic surgery apropos of Dollar's operating table. This mechanical appliance, while a decided improvement over any of the other tables used by the profession, at least those known to the writer, exhibits the following leading objectionable features: First, the difficulty of getting most horses into it; and, second and last, but not least, the impossibility of getting the balance near it. The time consumed and energy expended in this way is often sufficient to throw, chloroform, operate and return the creature to its stall. That much for Dollar's operating table. Asepsis and surgical quietness are, to say the least, desirable features. As previously stated, they cannot be granted with to-day's means of restraint for our equine patients. Neat surgery and unexpected movements of the field of operation—asepsis and struggling on account of its dust, etc.—are incompatible. Therefore general, or at least topical, anæsthesia must be used to get the best possible results. While in a great many instances topical anæsthesia suffices—general anæsthesia, at least to a state of total loss of consciousness, is imperative in all capital operations. Of the many acci-

dents which are liable to occur while operating, even when a local anæsthetic is used, a condition which, for want of a better name, may be termed "struggling myositis," has furnished me the greatest number of deaths. Among the local anæsthetics a ten per cent. cocaine solution is the most reliable one; a saturated aqueous solution of chloretone cannot take its place, as most patients will react, and some so violently as to question its positive anæsthetic properties, at least in the horse. Three agents demand attention for general anæsthesia of the horse: Chloroform, chloral hydrate, ether, and as a fourth morphine may be added. All have undesirable properties, but chloroform is the safest and most agreeable general anæsthetic to give, excepting ether, which the writer cannot discuss, as it has never been used by him in general anæsthesia of the horse. L. A. Merillat, on page 816 of the *Journal of Comparative Medicine and Veterinary Archives*, Vol. 14, No. 12, in an able discussion on chloroform narcosis, reports but four deaths out of about 15,000 chloroformizations. He says, "As to the danger of deaths, records of approximately 15,000 cases show but four deaths, all of which were traced not to cardiac lesions, as might be expected, but to careless administration, especially in failing to observe the arrested respiration in time to apply restorative measures." The writer has used chloroform liberally the past three years without any accidents worth mentioning. In 1898 chloroform was employed 412 times; in 1899, 589 times; in 1900, 601 times, giving a total of 1602 horses. The main objection to morphine lies in the fact that it is unreliable in its action. It does not produce a deep narcosis, and a great many animals subsequently become very restless at times for hours afterwards, thus seriously interfering with bandages, asepsis, leading to secondary hæmorrhage, etc. Chloral hydrate was employed 16 times. Twice intravenously, the horses weighing 1202 and 1025 lbs. respectively. Both got 40 grammes into the jugular and died half an hour afterwards. In the other cases it was employed per rectum. Those two who received it intravenously began to stagger in a few moments after they got the dose, fell down, sleeping soundly. The mucous membranes became more and more cyanotic, the pupil dilated, respiration slower and slower until death, in spite of artificial respiration, taught the writer a lesson on the narcotic effects of chloral hydrate given intravenously. Chloral hydrate per rectum was employed as follows: First the rectum was emptied by hand. To do away with the irritating properties of

chloral hydrate it was infused well diluted in the last ten cases, as proctitis and prolapsus recti was observed in the first four cases where it was infused at 125:1500. The formula used in the last ten cases, freshly prepared each time and infused at body temperature, was: Chloral hydrate, 125.0; mucilaginis, 75.0; aq. destillat, 3000.0, M. A great deal of this injection was thrown out again, and to overcome it the hand was held over the anus to prevent that occurrence. The narcotic effects of this chloral hydrate emulsion began to show all the way from 25 minutes to 1 hour after entering the rectum, apparently depending on the individual disposition of the animal. Thus lymphatic horses succumbed quicker than the highly bred nervous one, while the younger ones were affected most violently. Some sway to and fro, knuckling over behind and in front, even falling down; others simply sleep soundly, snoring loudly. In all cases the chloral hydrate infusion was made in the operating room, as the writer feared that the muscular inertia would render it unsafe to lead the animal from its stall to the operating room. Chloral hydrate in a safe dose does not produce complete and deep anæthesia, the patient reacting during neurectomies. The psychic depression lasts from 45 minutes to 4 hours. The majority of the animals thus treated could get up soon after the operation was finished, although a decided want of coördination was exhibited, the creature swaying and knuckling. The 8th one narcotized with chloral hydrate was down and unable to rise for 4 hours. In the first four cases proctitis plus prolapsus of the rectum followed about four hours after the chloral hydrate infusion had been administered. The mucous membrane was swollen and covered with little red points. One of the prolapsed recta was replaced some eight times before it remained *in situ*. This same case discharged a tubular membranous mass on the sixth day. One animal fed against the writer's orders soon after it was returned to its stall was reported to attempt to vomit. He suffered with a pharyngeal choke, as it is so often seen when animals are fed immediately after they awaken from a narcotic state, at the same time easily avoided by keeping food and water from them for about one hour after they are returned to their stall. The explanation lies in the relaxation of the pharyngeal muscles, that is their wanting tonicity, as the result of which the bolus becomes lodged in the pharyngeal cavity. Quite contrary to the generally accepted rule to give chloroform drop by drop and with air, the writer follows the method described so well

by L. A. Merillat (referred to above), namely, the patient, so to speak, is choked off with a good dose of chloroform as quickly as possible, but without any air at all. While this may seem theoretically wrong, every-day practice supports it as correct and safe. More than one minute has never been consumed by the writer to deeply chloroform a horse. When a continuous narcosis is essential afterwards chloroform is given in small quantities and mixed with air. On an average 10 to 15 minutes are required for the animal to regain its feet after coming out of the chloroform; occasionally after a prolonged session one half hour may be necessary before the animal gets up without tumbling about. Animals fed soon after their return from the operating room usually show attempts at vomiting and may expel a greenish, slimy mass or even suffer subsequently with a fatal deglutition pneumonia. The disadvantages of the chloral hydrate narcosis and the advantages of chloroform according to the writer's experience are as follows: *Chloral Hydrate.*—(1) The necessity of raking the rectum; (2) The necessity that a person must keep the anus covered with the hand to prevent the escape of the emulsion for 25 minutes to 1 hour; (3) The possibility of a proctitis and prolapsus recti unless very dilute and fresh preparations are used; (4) The waste of time before narcosis sets in, 25 minutes to 1 hour; (5) The waste of time before the animal can rise safely after the operation is finished, 45 minutes to 4 hours; (6) Deep narcosis cannot be obtained with a dose safe to the animal. *Chloroform.*—(1) Narcosis is obtained in 20 to 45 seconds; (2) Complete anæsthesia is surely gotten; (3) The patient almost invariably regains its feet in from 10 to 20 minutes after the operation is finished; (4) With ordinary care it is the safest and most complete general anæsthetic for the horse.

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By Adolph Eichhorn, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

A Rare Case of Bradycardia.—By bradycardia (hypodynamia, adynamia cardis) is understood a diminishing in the number of the heart beats, resulting from an irritation of the vagus or the vago accessorius. The irritation may take place in

the vagus centre, in the peripheric course of the nerve, or by a reflex action. It may be observed as a symptom of different organic diseases, in intoxications and in certain diseases of the nervous system. According to the causes, bradycardia is divided into a physiologic, idiopathic and a symptomatic form. To the first form belong such cases which are brought about by size, age, temperature, food and work, while the symptomatic bradycardia manifests itself in some organic diseases (hydrocephalus chronicus internus, hyocarditis), the cause of the idiopathic bradycardia cannot be explained. Truffer speaks of a transitoric and permanent bradycardia, but it seems to be more proper to differentiate between a physiologic and a pathologic form. In veterinary literature very little is mentioned about the occurrence of this disease. Vogel and Nordheim each observed a case in a horse, in which the number of pulse beats were diminished to 19, respirations 15. The autopsy in one case proved hypertrophy of the left heart, in the other case a dilatation of the heart. Fröhner observed in a nine-year-old bulldog a pulse frequence of 20 beats, and found at the autopsy a dilatation of the aorta close to the semilunar valve. Dickerhoff observed two cases in the horse, in which the beats of the pulse in one case were reduced to 17 and in the other to 12. The author had an opportunity to observe carefully a case in which the pulse frequence dropped to 9 per minute. The case occurred in a stallion 3½ years of age, which was brought to the veterinary clinic at Budapest with the history that the horse during a day frequently staggered, backed and finally fell with the hind part. These symptoms were shown more pronounced during riding, to which the dyspnœa and roaring point. The minute examination which was made with the aid of all the diognostic means brought to light the following picture of the disease: Intestinal catarrh, coprostasis, considerable indican in the urine, fæces acid in reaction, and undigested. Heart's action strong, 32 beats per minute, but on the following day arythmia was audible in the manner that both heart sounds were split, the systolic sound being even doubled. The treatment consisted of the administration of saline salts, although, without success. The patient was repeatedly galloped for ten or fifteen minutes at the time without noticing the staggering given in the history, or any other change. On the tenth day the horse was galloped again for ten minutes, after which he broke down in the hind part, but soon got up without assistance. The arythmia was now more pronounced;

at one time the fifth, then the eighth, or another sound ceased; sometimes the systolic, other times the diastolic sound was absent. Eleven minutes after splitting of the sounds as before was audible. The weak, small, empty and irregular pulse was 30 per minute, and on the following day 28. From now on on the consecutive days the number of pulse beats were diminished to 24, 16, 14, etc., to observe on the 22d day a diminishing to 8 beats, which was never seen yet. To strengthen the diminished action of the heart, the patient received 500.0 gm. alcohol in two doses, and three times 10.0 gm. doses of the tinct. of strophanthus daily; also Carlsbad salts and winesups, but all failed to prove successful. The horse died with the appearance of great dyspnœa and attacks of convulsive spasms. Autopsy: Gastritis composa, enteritis hæmorrhagica, hæmorrhagica subepicarditis, degeneratio parenchymatosa myocardii. The author considers the pronounced bradycardia as reflectoric produced by the diseased condition of the stomach and intestines, in which the irritation of the nerve fibres in the walls of the stomach, was forwarded in a centripetal direction to the vagus centre, where it was transmitted to the inhibitory fibres of the same nerve, causing the bradycardia. The parenchymatous degeneration of the heart muscle, which often would accelerate the heart's action, is to be considered as a result of the existing condition. Further to be seen in this case, that the bradycardia was symptomatic, which in favorable termination of the diseased condition of the stomach and intestines, presumptively would have caused only a transitory diminution in the number of pulse beats.—(*Koch's Monatschrift.*)

To the Differential Diagnosis of Tristeza* and Anthrax [*Lignière*].—Tristeza can be very readily mistaken for anthrax, but regarding the symptoms and the course of the two diseases, a distinct differentiation is possible. In most cases of anthrax the disease runs a rapid course, so that we hardly ever see the animal sick; recovery is an exception. The mucous membranes are of a violet color. In tristeza we also may observe cases running a rapid course, but as a general rule the disease lasts from four to eight days. Recovery is more frequent, the mucous membranes are very pale. In tristeza there is always hæmoglobinuria; in anthrax in cattle hæmaturia might be present in exceptional cases. The fæces in anthrax are very loose, and mostly of a bloody color, while in tristeza they are

* Tristeza, as proved by Lignière's investigations in Argentina, is the same disease as Texas fever in this country. See January (1901) Review, page 754.

of a specific rusty brown color, mixed very rarely with blood. On autopsy these differences are not so well marked. The most important signs of the macroscopical changes can be differentiated in the following:

Tristeza.	*Anthrax.*
Spleen enormously enlarged, of a dark color and of a firm consistence.	Spleen very much swollen, pulpa black, soft and semisolid.
Liver yellowish, considerable cloudy bile.	Liver always violet, bile liquid.
Kidneys almost black or very pale.	Kidneys always hyperæmic.
Hæmoglobinuria.	No hæmoglobinuria, rarely hæmaturia.
Lymph glands, slightly hypertrophic, rarely hæmorrhagic.	Lymph glands very hypertrophic, frequently hæmorrhagic and black, surrounded by an extensive œdema.
Muscles of a normal healthy color.	Muscles always grayish colored, having the specific febrile odor.
Blood mostly clear, coagulates well, first bright red, later becoming dark.	Blood thick, violet; as soon as leaves the vessel of a dirty red color.

Especially the appearance of the muscles is considered by the author as the most characteristic difference between anthrax and tristeza. The microscopical examination proves two entirely different diseases. In the place of bacteria, in tristeza, the red blood corpuscles (especially the ones in the kidneys) contain pear-shaped or round parasites, which will not take Gram's staining, but take well the methylen blue. Also the number of the red blood corpuscles can be used in the differentiation of this disease. In tristeza their number is very small, while in anthrax this is not the case. Finally the differential diagnosis is supported by test inoculations. Tristeza is only transmissible to the bovine species. Guinea pig, rabbit, sheep, goat, hog, horse, etc., are insusceptible, while anthrax is fatal to all animals.—(*Recueil de Med. Vet.*)

EXTIRPATION OF A MELANOTIC DEGENERATED PAROTID GLAND [*Dr. Vogt*].—The right parotid gland of a gray gelding gradually increased in size to such an extent that it interfered with the turning of the neck to the right, and also affected the function of respiration. As this happened to be a gray gelding, the diseased condition was considered to be of a melanotic nature. It was concluded to extirpate the gland. An incision was made into the skin extending the whole length of the gland, which was then dissected from the gland, after which the bluish-black gland was visible. The inferior portion of the gland was

then dissected, elevated, and the auricular vein ligated by a double ligature, almost the entire gland was then removed by twisting. The temporal vein bled considerably, but could not be reached; the bleeding was stopped by pressure (tampons). The recurrens, facial, carotid, and the tendinous portion of the sternocleido-mastoidens were spared. A very small portion of the gland, situated towards the ear, could not be removed. The removed mass weighed 390 gm. The cavity of the wound was packed and closed with a few stitches. The next day considerable swelling made its appearance, which interfered with mastication. The remaining portion of the gland was daubed with tincture of iodine, which then gradually became lighter and finally covered with granulations. A remained salivary fistula was easily closed by the use of the nitrate of silver stick. Respiration and action in neck became normal.—(*Deutche Thier. Wochenschr.*)

To the Harmless Effect of the Juice from Sterilized Tuberculous Meat [*Dr. A. Fiorentini and Dr. E. Garino*].—At the June meeting of the Associazione Sanitaria, in Milan, Garion reported experimental investigations, which he performed in communion with Fiorentini. It was to be ascertained if the meat of tuberculous animals after boiling contain any toxins which would be injurious to the human health. For this experiment samples of juices were used, which were taken from a Rohrbeck's apparate of the Milan abattoir, during the sterilization of tubercular meat under steam pressure. As test animals healthy and inoculated tubercular guinea pigs were used, which received subcutaneous or intraperitoneal injections of the juice. As to the results of this experiment, it was proved that the test animals as the result of the injections, did not show an impairment of their health in either a general or local way. The guinea pigs affected with tuberculosis, did not develop new inflammatory conditions around the tubercular herds, which was regarded as characteristic to the influence of tubercular toxins. Therefore the adoption would be admissible that as well in human beings, the consumption of sterilized parts from tubercular animals would not involve the health. Fiorentini and Garino as a result of their careful investigations came to the conclusion that the toxic products which are formed in the living organism of tubercular cattle are quickly eliminated from the system. This also explains why we frequently find cattle in an advanced state of tuberculosis, which are in well nourished condition.—(*Bolletino di Assoc. Sanit. Milanese.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Funiculitis of Castration in the Cat [*By L. Magnin*].—A seven months' old cat was castrated by enucleation, torsion and scraping of the cord. The operation was followed by repeated hæmorrhages, which weakened the animal very much. A week later the parts were much swollen; the right side apparently healed, while on the left there escaped bloody pus. The stump of the cord was hard and swollen. Examination of the pus with the microscope gave negative results as to the mycotic nature of the trouble. Iodine was applied to the swelling, which seemed to reduce it. On the right side the swelling increased, forming a hard, painful mass and running upwards along the cord. Iodine and afterwards poultices were applied, which were followed by improvement and reduction of the enlargement, which became more and more marked and ended ultimately by radical recovery. As the primitive operation had been done antiseptically, the author thinks the animal was infected by rubbing himself against shavings or in scratching the earth of a garden where he used to play. In conclusion Mr. M. believes that castration by ligature is preferable to scraping of the cord and insists on the necessity of avoiding infection of the wound afterwards by antiseptic precautions. One must not be too hasty to resort to another operation.—(*Rec. de Med. Vet.*)

Aneurism [*By M. Mouquet*].—This relates to a horse which was affected with intermittent lameness of the right foreleg. When visited by the author, the horse did not show his lameness, but presented a peculiar appearance, which was attributed to an aneurism. The result of the examination is described as follows: Looked at full face, the chest shows a marked asymetry. The left pectoral muscles seem much larger than the right, and a marked projection is observed, principally over the left sterno-humeralis muscle. Looked at by side view, the right side of the chest is normal, the left is evidently deformed. On examining the regions situated on each side of the trachilian prolongation of the sternum, it is observed that on a level with the left sterno-humeralis muscle the swelling is depressible, elastic, not œdematous, diminishing under pressure and giving to the hand a peculiar feeling. By pressing over it, obliquely from downwards, upwards and from forwards backward, weak pulsations are detected, sometimes absent and being felt generally a little

later than those of the facial artery. By auscultation, a vibratory fremitus is heard analogous to the vibrations heard with the phonendoscope when auscultating an animal which trembles. This fremitus is louder at some moments than at others. The author made a diagnosis of aneurism of the inferior cervical artery or perhaps also of the tracheal trunk.—(*Bulletin Soc. Centr.*)

CARIES OF THE RIGHT BRANCH OF THE INFERIOR MAXILLARY, ALVEOLITIS, AND CARIES OF THE TWO FIRST CORRESPONDING MOLARS [*By Rousselot and Savary*].—A four-year-old colt received a kick on the right side of the lower jaw. A trauma resulted, which was treated with simple antiseptic treatment, there being no fracture. There remained, however, a thickening which was rebellious to all treatment, and the primitive wound assumed the aspect of a fistulous injury, which on being explored revealed a manifest carious condition of the maxillary bone. Treatment was immediately instituted; free incision of the fistulous tract, and antiseptic dustings, with liquor of Van Sweiten and iodoform gauze. At first this treatment seemed to succeed, and it was thought that the continuation of injections of cresyl and dusting of iodoform would be followed with recovery. However, the improvement was temporary, and another probing of the wound revealed that the first lower molar was diseased. A small splinter of bone was removed; there was a characteristic odor; the case was not only one of maxillary caries, but complicated with alveolitis and dental caries. Severe surgical interference imposed itself, with all its dangers, principally that of possible fracture of the jaw bone. This, however, was decided upon, the animal cast and secured, the parts disinfected, the maxillary exposed by V incisions, and trephined on the two tangent places in such a way as to reach the roots of the first two molars. Once the external plate of the maxillary was removed, an escape of greyish sanious, nauseous pus took place, fragments of the maxillary and of the roots of the teeth were removed, and finally, not without difficulty and great care, the first tooth was extracted with nippers, the second gouged out. The after treatment consisted of injections of weak cresyl solution, iodoformed gauze in the wound and suture of the cutaneous wound. The food was made of soft liquid mashes and gruel. After two weeks the fistulous wound was considerably reduced, and a month after the operation the animal was discharged radically cured.—(*Rec. de Med. Vet.*)

COMMINUTED FRACTURE OF THE HUMERUS CONSEQUENT UPON A LUXATION OF THE SHOULDER JOINT [*By H. Martin*].—In jumping over a low fence, a horse slipped with the left fore leg over a stone and suddenly stopped; the hind quarters had not passed over the fence. The animal remained standing up, the left fore leg slightly flexed, touching the ground with the toe of his foot. The region of the shoulder was swollen. Palpation over the joint was painful and revealed crepitation over the entire region. The arm was the seat of an abnormal mobility, and when the animal was made to move crepitation of the fractured end was felt and heard. The animal could move only on three legs and it was with great difficulty that he was brought back to the stable. The diagnosis of fracture of the humerus imposed itself, and he was destroyed. At the post-mortem were found abundant bloody infiltration through the subcutaneous tissue, the muscles of the shoulder and arm being all torn; the humerus was fractured in seven pieces, the superior epiphysis entirely separated from the body of the bone and broken in two pieces; the inferior epiphysis was intact and attached to the diaphysis, which was broken into three pieces, one of which being itself broken in two others. In studying how the accident took place, the author concludes that after jumping the fence and coming down to the ground, the horse slipped on the stone, which produced an exaggerated extension of the shoulder, a luxation, and that the entire weight of the body having thus been thrown entirely on the left fore leg, the humerus received the whole shock and was fractured.—(*Rec. de Med. Vet.*)

UPON THE PROGNOSIS OF TRAUMATIC ACCIDENTS IN SOLIPEDS [*By M. Cadeac*].—Making allusion to the facility with which serious prognoses are made hastily in some cases where the lesions are very extensive, the author relates three cases in which he points out the error which would have been committed, if in these three cases the verdict of death had been carried out. *Case No. I.*—A horse knocked down by the machine of a tramway and dragged for some distance was found with a wound on the right side of the neck, 45 to 50 centimeters in length, and extending from the base of the ear to the middle third of the neck. The skin, the muscles, and all the tissues of that side were injured, except the parotid, the longus colli, and the vertebræ. The carotid, the jugular, the œsophagus were exposed, the trachea still covered by the muscles and skin. Deglutition was difficult and so painful that the animal would not swallow

his saliva ; although regular in its middle, the wound ended inferiorly in a *cul-de-sac*, and complications of suppuration and of infiltration were possible. This animal was condemned by several veterinarians and at last treated by the author. Aseptic cotton, disinfection of the edges of the wound and of the superior part of the neck with sublimate solution, was the treatment which was prescribed. After two months the animal resumed his work. *Case No. II.*—In traveling fast, a horse made a misstep and fell a somersault, on his head, thus protecting his knees, which escaped injury. There was a complete denudation of the greater part of the face. The frontal bone was exposed, scratched, its periosteum removed, and gravel incrusted in its substance. The nasal bones were exposed in two places. The wound measured 40 centimeters in length and 12 in width. Washing with sublimate solution, dressing with tannin powder, boricated vaseline, and after six weeks of that treatment the wound was granulating well and closing rapidly. During the treatment there was sloughing of several little pieces of necrosed bones. *Case No. III.*—A horse was hurt by the shaft of a truck, which entered obliquely from forward backward, at the elbow of the rear side, a little below the subcutaneous abdominalis. Almost the entire skin was torn off as far as the sheath. There was an immense piece hanging down ; an abundant hæmorrhage took place and the animal was very weak. The hanging flap of skin was freely excised and an aseptic bandage, renewed every day, was applied. After ten days the wound had assumed an excellent aspect and the animal was out of danger. After recording these three cases the author alludes to other wounds, which, on the contrary, were not deep, and still almost always demand a severe prognosis, such as those in the neighborhood of the anus, where complications are very often met with by the presence of septic germs contained in the fæcal matters or inoculated by the impinging body.—(*Journ. of Zootechnie*).

A Few Observations on the Subject of Castration in Cryptorchids [*By Prof. A. Labat*].—In previous communications the author has made known the results he had obtained in a series of operations of castration made on cryptorchids, and expressed the thoughts that these operations had suggested to him. Since their publication he has operated upon a number of subjects, and now he wishes to establish statistics which will show that the operation, although delicate and difficult, is not necessarily followed by threatening compli-

cations. Gathering the material of all his operations into one list, he gives an interesting statistic in relation to the nature and frequency of each kind of cryptorchidy. For instance, out of 151 cases he has met with: 19 cases of double abdominal cryptorchids, 72 of unilateral left, and 44 unilateral right abdominal cryptorchidies, 6 of unilateral left and 7 unilateral right inguinal cryptorchidies. Out of the 170 operations which those cases have required, there has been only a mortality of five individuals, and among those none having inguinal cryptorchidy. Out of 154 operations for the abdominal form of the disease, the average mortality has been 3.24 per cent. The *modus operandi* has been that described by Prof. Degivé.—(*Revue Veterinaire.*)

ENGLISH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Cases of Fracture of the External Tubercle of the Humerus [*D. Pugh, F.R.C.V.S.*].—Similar injuries have not been frequently recorded and the recoveries which accompany the three cases herewith presented are very interesting. They are three cases of fractures of the external tubercle of the body of the humerus, accompanied with nearly the same symptoms, submitted to similar treatment and followed by a like result—recovery in comparatively short time. The three cases had about the same cause, a kick from another horse while being turned to pasture. Lameness, more or less swelling of the leg from the shoulder to the knee, great pain on manipulation, crepitation, and more or less discharge from a wound which occupied the seat of the injury. The treatment consisted in local anæsthesia in one case and general in the two others, free incisions down to the fracture, dissection and extraction of the external tuberosity of the humerus with fragments of bone varying in size from three-quarters of an inch in one case to as much as three inches in another. The balance of the treatment was very simple, the parts being simply treated as an open wound.—(*Journ. Comp. Path. and Therap.*)

Hysterectomy in the Bitch [*By H. A. Woodruff, M.R.C.V.S.*].—Two interesting cases, followed by excellent results, thanks to the thorough disinfection of the wound area, instruments, etc., to the washing out of the peritoneal cavity,

and to the general antiseptic precautions observed. In the first it was a pug bitch, six years old, in a weak condition from protracted labor, which had passed a dead and partly decomposed puppy, and had one left which could not be removed in a natural way. In the second case, a half-bred bull and fox terrier bitch, over due, with labor pains without results, and very offensive discharge from the vagina. When operated upon five dead pups in a semi-putrid condition and fully developed were found in the uterus. The *modus operandi* was as follows: chloroform, careful and thorough disinfection, incision on the median line from just behind the umbilicus, a ligature applied to the fundus of the uterus and the latter cut through immediately in front of the ligature; then the body of the uterus was lifted out of the abdomen, the right horn incised and the fœtuses extracted. Next a ligature was placed above each ovary and these organs removed, together with the whole uterus, the broad ligament being torn. The peritoneal cavity and vagina were washed with a 1 per cent. solution of chinosol. In one animal a few drops of putrid fluid had escaped into the abdomen from the uterus as this was removed, but on account of the washing with chinosol nothing occurred. Both animals did well.—(*Journ. Comp. Path. and Therap.*)

FRACTURE OF EIGHT RIBS [*By H. Taylor, M.R.C.V.S.*].—This is certainly a very unusual case. Kept in slings for some two months to be treated for an open fetlock joint in the off fore leg, a heavy Clydesdale gelding had ultimately to be destroyed as being incurable. At the post-mortem which was made it was found that eight ribs on the near side had been fractured, some showing attempts at repair, with more or less union, while others showed the fractured ends very smooth by rubbing against each other. As on inquiry into the previous history of the horse, nothing had been elicited as to the cause of the extensive lesion, it is probable that the fractures occurred some time while the animal was in slings, as he occasionally used to throw his whole weight into them. There was no osteoporosis with him or other bone disease.—(*Veter. Journal.*)

A CASE OF POLL-EVIL [*Arthur New, M.R.C.V.S.*].—Cases of poll-evil and fistulæ of the withers are long and tedious, and not infrequently their rebellious condition is due to the fact that the true centre of the disease is not sufficiently exposed; dead structures have had no chance to escape and cicatrization has thus been prevented. In the case recorded by the author, however, the length of time was short, considering the extent of the

disease. It was a horse which had three fistulæ of the poll for five weeks. These had been freely opened, broken tissue had been removed, decayed structures taken off, and free injections and dressings of chinosol resorted to. After a month of treatment, although the external wounds seemed ready to close, the bottom was still diseased. No granulations were forming and the suppuration, quite abundant, was increasing in considerable quantities. It was then that the author cut very freely forward, between the ears, and finding the occipital bone bare and rough, he scraped it and dressed the part with icthyol. From that moment, with the exception of the formation of two little abscesses on the near side, the wound went rapidly on to healthy granulation. The horse was operated on, say, about the end of June, and was convalescent enough to be sent out to grass on the 16th of July. He was put to work later, having made a perfect recovery.—(*Vet. Record.*)

FRACTURE OF THE DENTATA.—In the *Veterinary Record* there is reported a case of fracture of the dentata, which had taken place in a four-year-old filly while being led out of her box. She was led into the yard by an ordinary hemp halter, and after going a few yards, without any warning, she reared up and fell right over on some granite stone pavement and died immediately. At the post-mortem a great deal of extravasated blood was found underneath the skin in and around the atloido-axoid articulation, and on further examination it was found that the dentata was broken into three pieces—fractured through the odontoid process and the body of the bone. The spinal cord was severed and much lacerated.—[A similar case occurred some years ago in one of our patients, but the animal was suffering with osteoporosis. The specimen was placed in the museum of the American Veterinary College.—A. L.]

TRAUMATIC PERITONITIS [*By H. Swann and Billingherst*].—A cart mare received a punctured wound between the 15th and 16th ribs, about a foot from the spine, on the near side. The wound was sufficient to admit a quill. Black oil had been used to dress the wound and pus had gathered into a pocket, owing to the destruction of the tissues by the sulphuric acid. The temperature of the animal was 104°, pulse 68, respiration hurried, mucous membranes injested, appetite poor. There was danger of deep cauterization and possibility of peritonitis. Still, by proper treatment, free incision, antiseptic dressings, etc., the wound assumed a better aspect and the animal seemed to go on towards recovery. The temperature

was down to 102 4-5, 101 3-5, 100 2-5; the pulse had improved—66, 64, 50. Respiration remained hurried. One morning she died after severe abdominal pains which lasted two or three hours. Post-mortem: External wound closing well, quite healthy. Blood and pus escape as the abdomen is opened. Peritonitis is well marked. On the abdominal wall near the external wound there is a black mark, in the centre of which is a small scar. Between the omentum and the spleen there was a large quantity of pus. The superior extremity of the spleen was gangrenous and in it there was a cavity containing about a quart of pus with broken-down spleen tissue.—(*Vet. Record.*)

TRIP TO THE PHILIPPINES.

By HAL C. SIMPSON, D. V. S., Denison, Iowa.

After making arrangements by correspondence, I reported to the Depot Quartermaster at Seattle, Wash., where I was informed that I was to have veterinary charge of the transport *Oopack*, from Seattle to Manila. Most contracts for this service are signed for one year, but I had the privilege of signing for one trip.

On the U. S. boats there is an army officer in charge, called the ship's quartermaster. Under him are the veterinarian, chief electrician, and quartermaster's clerk, who get cabin accommodations. They are paid $100 per month. Then come two electricians and an assistant veterinarian at $75, with messroom accommodations, that is, with the engineer; two wagon masters at $75, four assistant wagon masters at $60, and teamsters at $40. The wagon masters and teamsters have a cook and messroom aft. The wagon masters are responsible for the care of the stock. The veterinarian has nothing to do except to tend to sick ones, and the assistants do that under his directions. I made it a point to see every animal once daily, and then was called at any time if needed to attend a sick animal. On the United States chartered transport *Oopack* stalls were provided for each animal. We loaded 364 horses and 400 mules, the animals being backed into the stalls and a breast strap of canvas put up in front to keep them in. All were fed on the floor. Were fed and watered as follows: 6 A. M., water, then hay; 9 A. M., grain; 3 P. M., water, then grain; 6 P. M., hay. Stalls were cleaned every day if the weather was suitable. After transfer sheets were made out, one mule developed strangles very bad, with suspicions of glanders, so was shot. Third day

lost one from azoturia. Fourth day, one mule was choked, due to guard sleeping. We had very rough weather and a number of seasick animals. Some were badly bruised by the vessel's rolling. There were a great many abscesses formed on the external angle of the ilium, also on the ischial tuberosities. The ceilings were very low, and where there was a framework a large animal couldn't stand comfortably. Sometimes during a sudden roll an animal would throw his head up so as not to lose balance, and bruise it quite badly.

After a very rough passage, arrived in Japan, where we stopped for a week. Unloaded the stock and turned them in a corral. They felt so good to get loose, with room to roll, that they hardly took time to eat for a day or two. The third night they stampeded; nearly all got out and ran over the country. Three were killed by the train. During our stay in Japan had a few wounds to treat. The rest of the time was put in sightseeing.

Upon reloading, caught the weakest ones and put them on the main deck, where they could get the most air. Had a day or two of rough weather after leaving Japan, then it got fair and began to get warm. Arrived in Manila Bay all right, having lost but six. If we could have unloaded the next day, wouldn't have lost any more, but there were two ships ahead of us. It was three days before we began to unload. In the meantime had lost four from heat exhaustion, and had others beginning to show symptoms—temperature from 104° to 108°, respirations accelerated and labored, pulse fast and weak, almost imperceptible, abundant sudation—in fact, had never seen animals sweat so freely. Convulsive movements of the extremities, generally going down never to get up again. Treatment, stimulants and cold water, applied very freely to head.

While on board had a great many with strangles, average about 60 per day for trip, treated with stimulants, occasionally febrifuges if fever was excessive; opened abscesses and observed surgical cleanliness as far as possible. Did not separate sick from healthy, because part of the time it was impossible on account of weather being so rough that ship rolled so they couldn't have been moved, and besides they had better be sick on board than ashore, opportunities for treatment being better. In a few cases had pneumonia as a complication.

Upon reporting for duty, was told to make out a list of drugs and instruments needed. In that respect the U. S. service is much ahead of the English. The water on most boats is very

rusty, the tanks having, as a rule, been used previously for salt water. If the water is fit, I think plenty of potassium nitrate dissolved in it is a splendid treatment. Magnesium sulphate in the mash about once a week is a good treatment also, as it helps to keep the bowels regular, constipation being one condition that has to be guarded against. Had plenty of disinfectants on the *Oopack*.

Had an uneventful voyage on the *Oopack* to San Francisco, and from there returned home.

AUTOMATIC SAFETY-VALVE STOPPER.

A DEVICE PREVENTING THE BURSTING OF PEROXIDE OF HYDROGEN BOTTLES.

The great trouble with peroxide preparations is that if the containers are tightly corked, the oxygen which separates and is set free, slowly but constantly as time passes, accumulates, until the bottles can no longer stand the pressure and burst, or the corks are driven out. Of the two alternatives, the bursting of the bottles is the most objectionable feature on account of the danger attached to it.

Containers of the hydrogen peroxide, U. S. P., which is a comparatively weak solution of H_2O_2, yielding but 10 volumes of oxygen, may be closed with a wooden stopper, which, by the porous nature of the material, permits the escape of the gas almost as soon as it is set free, thus avoiding explosion and rupture of the bottles or the driving out of the corks.

a

(*a*) Puncture.

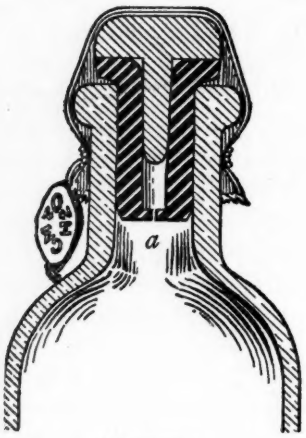
Cut No. 1. Illustrates the cross section of the safety valve rubber cork, showing the wooden top and the puncture at the bottom. A thin strip of parafined paper is inserted into the puncture.

While these wooden stoppers answer very well for solutions of H_2O_2 responding to 10 volumes of oxygen or less, with stronger solutions, such, for instance, as Marchand's peroxide of hydrogen medicinal (15 volumes), or his hydrozone (30 volumes of oxygen) they are quickly attacked by the solutions, as are also the ordinary corks, and within four months are completely oxidized, not merely bleached, but rendered so soft that they cut like pot cheese. From that time the goods are unfit for sale.

In order to prevent these difficulties and especially to obviate the bursting of the bottles containing hydrozone. Mr. Marchand, the manufacturer of that article and other well-known brands of

peroxide of hydrogen, has devised an ingenious stopper which he calls the "automatic safety valve rubber cork," and which is shown in the illustration.

The material of the stopper is vulcanized rubber. The beveled end is punctured through in such a manner that when the pressure in the bottle rises above 5 to 8 pounds to the square inch (according to the thickness of the rubber at the bottom, which may vary slightly), the excess of free oxygen finds free egress and thus relieves the tension.



(*a*) Puncture.

Cut No. 2. Illustrates the cross section of a bottle corked and capped with vegetable parchment and parafined muslin; no wire.

Cut No. 3. Illustrates the top of the bottle with the seal.

This device is first inserted, and a plug of porous wood is then driven in, thus stiffening the rubber and completing the operation of "corking."

The capping consists of vegetable parchment covered with parafined muslin, no wiring being used or needed.

It is easily seen that this style of closing the bottle obviates the possibility of bursting. Assuming even, that through some imperfection of the stopper, the puncture should close, as soon as the pressure rises to a point far within that required for rupture of the bottle, the stopper, not being wired down, will yield and be forced out.

Retail druggist who have for so many years been the chief sufferers and losers from the bursting of the peroxide containers, and the deterioration of the substance otherwise from the causes indicated above, will welcome Mr. Marchand's invention as a happy solution of what has to them been a very serious problem

in the past, since it will enable them to supply their trade with the higher solutions of hydrogen peroxide, and especially that preparation of Marchand's, for which the stopper was particularly designed, "hydrozone," which carries 30 volumes of oxygen.

The device described above—the automatic safety-valve stopper—having entirely obviated the danger arising from the explosion of bottles in handling, there is certain to be a largely increased demand for Marchand's concentrated solutions of the peroxide of hydrogen (which alone will be corked with the patented stopper), since physicians anxious to obtain quick results will never prescribe anything but the most active solutions, or those richest in active oxygen, and since druggists will be protected absolutely against loss by deterioration or explosion. The medical profession is being thoroughly advised of Mr. Marchand's new method of closing his bottles of "peroxide of hydrogen medicinal" and "hydrozone," and will be certain to avail themselves of the advantages thus guaranteed them.—(April, 1901, issue of *National Druggist of St. Louis.*)

NOTE.—Remember there is no popping when corks are removed.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

Dr. Wm. Herbert Lowe, chairman of the Committee of Arrangements, advises us that the committee has selected the Rudolf Hotel at Atlantic City as the meeting place and headquarters for the convention of 1901. "The Rudolf" is located on the ocean front and is well adapted for our purposes. The Assembly Hall in the Rudolf is light and well ventilated. It is *away from the noise of the ocean*, and is quiet and suitable.

The management of the Rudolf Hotel at Atlantic City offers the Committee of Arrangements, American Veterinary Medical Association, space at the rear of the hotel to erect a tent and construct seats where the surgical clinic may be held. This is considered by the committee to be a good location and offers the advantage of being convenient to the headquarters.

A letter from Secretary Stewart, dated June 24, contains the following outline of the arrangements to that date: The programme for the Atlantic City meeting is gradually being completed, and the following papers have been promised, with several more under consideration:

"Lameness," by Dr. W. C. Fair, of Cleveland, O.

"Municipal Meat Inspection, with Special Reference to that in Vogue in Nashville," by Dr. Geo. R. White, of Nashville, Tenn.

"Distemper in the Dog," by Dr. Wm. McEachran, of Windsor, Ont.

"Treatment of Tuberculosis by Salts of Copper," by Dr. D. P. Yonkerman, of Kalamazoo, Mich.

"Contagious Abortion of Cattle," by Dr. G. W. Dunphy, Quincy, Mich.

"Ethics of Veterinary Education," by Dr. R. S. Huidekoper, Philadelphia, Pa.

"Texas Fever in Native S. C. Cattle," by Dr. G. E. Nesom, Clemson College, S. C.

"Skin Disinfection, and Wound Infection," by Dr. V. A. Moore, Ithaca, N. Y.

"Vaccination as a Preventive in Hog Cholera," by Dr. A. T. Peters, Lincoln, Neb.

"Attitude of the Farmer towards the Tuberculin Test," by Dr. Carl W. Gay, Syracuse, N. Y.

"Anthrax and Preventive Inoculation in Louisiana," by Dr. W. H. Dalrymple, Baton Rouge, La.

"The Value of the more Common Surgical Operations on the Horse," by Dr. L. A. Merillat, Chicago, Ill.

The titles of papers by the following members have not been ascertained:

Dr. C. H. Higgins, Montreal, Que.
Dr. C. A. Cary, Auburn, Ala.
Dr. L. Van Es, Mobile, Ala.
Dr. C. C. Lyford, Minneapolis, Minn.
Dr. S. B. Nelson, Pullman, Wash.

Letters are being received from members in various parts of the country telling us that they expect to attend the meeting if possible, but business is rushing and may possibly interfere. It is hoped that the collection end of business will be so good that the members will feel justified in suspending practice for a week or ten days to enjoy the advantages of the Atlantic City meeting. The local committee of arrangements has secured headquarters at the New Rudolf Hotel, which offers very moderate rates to our membership and provides a desirable and quiet convention hall, with committee rooms, etc.

The railroads have granted one and one-third fare transportation on the certificate plan, which insures a low rate from all parts of the country. Those who live west of Buffalo will pos-

sibly find it more economical to travel through that city, buying return tickets to Buffalo on account of the Exposition, and repurchasing tickets from there to Atlantic City. Further information will be given for publication in the next number of the REVIEW relative to transportation.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

A recent letter from Prof. W. L. Williams, Chairman of the Committee of Arrangements, states that the programme and arrangements for the meeting in September are in a thoroughly satisfactory condition, and that the meeting of 1901 will surpass in interest and value to those who attend that of 1900. A number of papers and case reports have already been secured from leading practitioners, and the committee is actively at work completing this part of the programme. These will be on topics of every-day interest to the practitioner, all will be brief, so as to permit of free discussion, as well as giving room for a larger number.

The clinics will be varied from last year in a large measure, and will consist of practical, every-day operations. Some cases for operation have already been secured and operators engaged. Like last year, as a rule, duplicate subjects will be secured for operation to avoid risk of disappointment by the failure of the animals to be presented, while an ample supply of operators will be on hand to carry out any operation where the announced surgeon fails to appear. The operations will be conducted in a simple manner with equipment available to the ordinary practitioner.

Arrangements with railroads are in course for one and one-third fare for the round trip. Numerous veterinarians from a distance have already signified their intention of attending the meeting, especially after attending the Atlantic City convention during the previous week. Such veterinarians from west of Buffalo can buy exposition tickets to the latter place, then one and one-third fare round trip tickets to Atlantic City via Lehigh Valley Railroad and returning can abandon their ticket at Ithaca.

The completed programme will be ready for August REVIEW. New York veterinarians willing to aid the programme with papers, case reports, or operations, are requested to communicate with the chairman of the committee at once.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The forthcoming semi-annual meeting will be held on Thursday, July 11th, 1901, at Stettler's Assembly Hall, 844 Broad Street (adjoining Broad Street Station), Newark, N. J.

A surgical clinic is to be made a feature of this meeting and the President's determination that "less time be spent in the transaction of routine business and more time devoted to the consideration of scientific and practical problems of the profession" will be carried out so far as possible.

GEORGE W. POPE, *Secretary.*

NEWS AND ITEMS

DR. LOVEJOY has been reappointed State Veterinarian of Illinois.

DR. J. W. SAVAGE, of Colorado Springs, Col., has returned to that city after a most healthful trip to South Africa in charge of a British transport of horses and mules.

VETERINARIAN WM. V. LUSK, Second Cavalry, U. S. A., has returned to duty at Matanzas, Cuba, after a four months' leave. He has entirely recovered from the fever which prostrated him in his early tropical experience.

THE firm of Wright & Merillat, of Chicago, have found it necessary to employ two assistants, Dr. Black, of the class of '89, Ontario Veterinary College, and E. Merillat, formerly dean of the McKillip Veterinary College.

DR. W. B. TRENBETH, of Cresco, Ia., and Dr. H. H. Conenour, of Pana, Ill., are among the successful candidates that took the Civil Service Examination for meat inspectors in Chicago last April. Both have been assigned to Chicago.

DR. R. S. HUIDEKOPER has assumed active editorial control of the *Journal*, Dr. Hoskins retaining the business management. The latter has been doing the work of the *Journal* almost single handed for a number of years, and the new arrangement will greatly relieve his overtaxed energies.

THE NEW HAVEN AUTOMOBILE COMPANY has withdrawn its public vehicles from the streets of that city, complaining bitterly that the citizens would not patronize them, as the company had been led to believe they would when they introduced them.

A PREPOTENT BITCH.—A small water spaniel bitch in Brooklyn, N. Y., in May of this year gave birth to six healthy

pups, she being at the time twenty-three years old, and not having been pregnant for ten years previously. This circumstance occurred under the observation of Dr. Bell, of the REVIEW, and is narrated with the idea that it constitutes a record in canine breeding.

AN ENZOÖTIC OF CATARRHAL INFLUENZA broke out in New York City and its environments about the middle of June, and it is estimated that 75,000 animals were victims. Not since the great epizoötic of 1872 were so many horses simultaneously affected. Veterinary surgeons reaped a rich financial harvest. But few horses died—only such as became complicated, or were exhausted by being overworked while suffering from fever and refusing nourishment.

THE ARMY VETERINARIAN NOT A CIVILIAN EMPLOYÉ.—The War Department has issued a circular stating that veterinarians of the Army are not civil employés, as stated in Circular No. 55, A. G. O., of Nov. 23, 1899, and that a uniform as per the following extract from G. O. 53, April 18, H. Q. A., has been presented: "*Uniform of Veterinarians.*—26½. Veterinarians will wear the undress and field uniform of a second lieutenant of cavalry or artillery, according to the arm of the service. omitting the shoulder straps; collar and shoulder ornaments to be of white metal."

THE CHICAGO VETERINARY COLLEGE.—Word reaches us that Drs. L. A. Merillat, Jas. M. Wright and E. Merillat have affiliated themselves with the Chicago Veterinary College. Dr. L. A. Merillat takes the chair of surgery, Dr. James M. Wright, cattle, sheep and swine pathology and obstetrics, and Dr. E. Merillat, physiology and demonstrator of anatomy. This college is to be congratulated on this strong acquisition to its faculty, as the gentlemen named have long been regarded as able teachers and successful practitioners. The alteration and extension of the curriculum to make room for these gentlemen will add materially to the thoroughness of the course as heretofore given by this old and reputable institution, and will undoubtedly redound to the advantage of attending students and the profession generally.

A TEN THOUSAND DOLLAR ENDOWMENT FOR THE FLOWER VETERINARY LIBRARY. — The Roswell P. Flower Veterinary Library, founded by a gift of $5000 by the late Governor of New York, for the use of the New York State Veterinary College, has just been endowed by Mrs. Flower with $10,000. The library now contains 1754 bound volumes, mostly recent and

up to date in their respective subjects, and forming a collection of the very highest value to the student and investigator in comparative medicine and allied subjects. Taken in connection with the large accumulation of books in the same fields, in the university library, this makes an unexcelled field for study and research, and it is confidently believed that the constant additions of the best modern publications will keep the library at all times up to date, as an unique centre of contemporary knowledge and achievement.

HEREDITARY LAMENESS.—Mr. F. R. Whipple, McKillip College, class of 1902, writes as follows of an interesting circumstance: "During the summer of 1899 a Mr. Ingram bought a fine looking six-year-old sorrel mare, which was very stiff. He thought she had been foundered, but as he wanted her for breeding purposes only, paid no attention to its stiffness. In April, 1900, she gave birth to a fine looking horse colt, which did well until some time in the fall, when it became affected in the stifles. I was consulted about the mare, and found she was suffering from navicular trouble, and told the owner that unnerving would be the only thing that would do her any good. On June 2 I operated, and to-day she goes as sound as any horse could. I have since found out that the party who raised her said she had given birth to one colt while he owned her, which became affected when about four months old, and was killed later; also, that the mare was affected this way before she was three years old. If the mare had navicular trouble, what was the trouble with the two colts?"

ALEX. EGER, 34 East Van Buren St., Chicago, Ill.,
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I have the following duplicate numbers of the AMERICAN VETERINARY REVIEW, which I would like to exchange for numbers *below* Vol. X:—Vol. XI, No. 5; Vol. XIV, No. 3; Vol. XV, Nos. 3 and 5; Vol. XVIII, No. 5; Vol. XIX, Nos. 11 and 12; Vol. XX, No. 2; Vol. XXI, No. 2; Vol. XXII, No. 1; Vol. XXIII, No. 6. Correspondence solicited for earlier volumes. Address WM. H. GRIBBLE, D.V.S., Washington C. H., Ohio.

AUGUST, SEPTEMBER AND OCTOBER, 1900, REVIEWS WANTED.
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